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# AERIAL AGE

## WEEKLY

Vol. I. No. 1.

MARCH 22, 1915

10 CENTS A COPY



*The Wonderful Prospects of American Aeronautics—They Are World-wide*



# Curtiss Flying Boat

*February Class—Curtiss Aviation School  
San Diego, California*



THE Flying Boat in this picture has been in the air 500 hours, traveling 30,000 miles. In this boat hundreds of passengers have been carried and dozens of persons have learned to fly. There have been no accidents nor repairs. This machine is equipped with the newly developed and very efficient single-acting aileron system for lateral balance.

The Curtiss Flying Boat has made flying a safe sport.

**Military Aeroplanes of both Tractor  
and Pusher types for land and water**

*Information on request*

**THE CURTISS AEROPLANE COMPANY**  
BUFFALO, NEW YORK

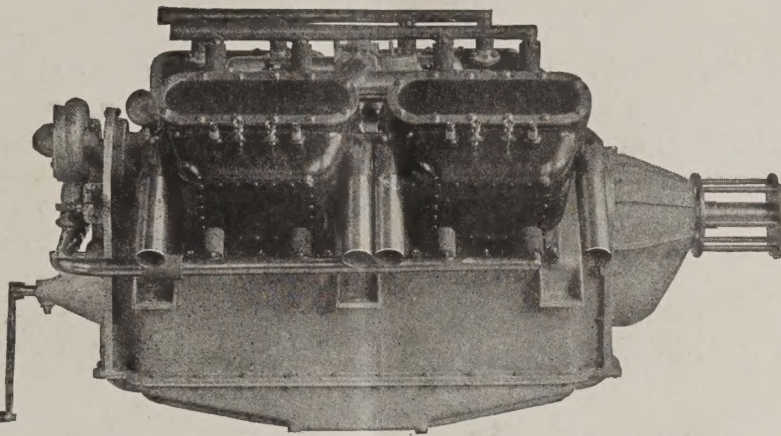


**Sturtevant**  
REG. U. S. PAT. OFF.

## 140 H. P. Aeronautical Motor

The latest addition to the Sturtevant line, embodying the most advanced European practice.

Eight cylinder, high speed type with propeller driven at slower speed through a reducing gear.



Extremely compact design.  
High Volumetric efficiency.  
Low fuel consumption.  
Minimum vibration.  
Two magnetos.  
Weight 4 lbs. per horsepower.  
Constructed entirely of domestic materials.

The largest manufacturers of aeronautical motors in the country

Prompt deliveries in any quantity. Complete specifications on request.

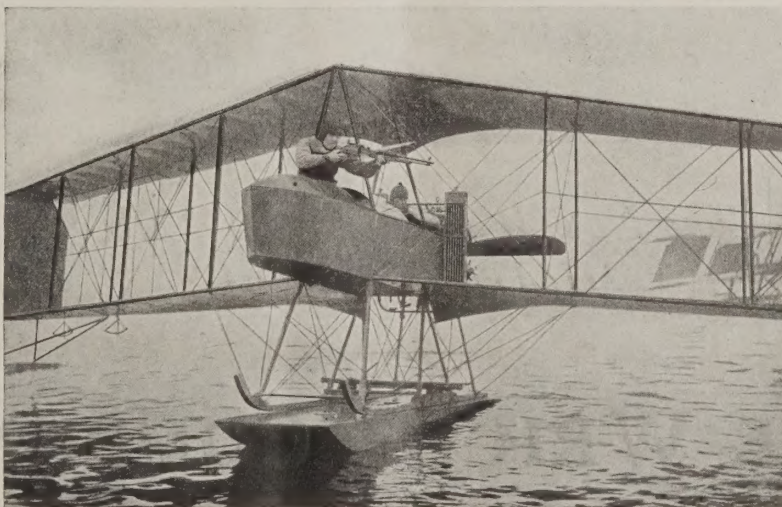
**B. F. STURTEVANT COMPANY, Hyde Park, Boston, Mass.**

## Burgess-Dunne Military Aeroplane and SEAPLANES

Furnished to  
United States  
Canada and  
Russia

Self-Balancing  
Self-Steering and  
Non-Capsizable

Form of wing gives  
an unprecedented arc  
of fire and range of  
observation.



Par excellence  
the weight &  
gun-carrying  
Aeroplane of  
the world.

Tail-less and  
Folding Enclosed  
Nacelle with  
Armored Cockpit

SPEED RANGE,  
40-80 miles per hour.  
CLIMB, 400 feet per  
minute.

*Burgess-Dunne convertible land and marine type as furnished the U. S. Army*

**THE BURGESS COMPANY**

*Sole American Licensees under the Dunne Patents.*

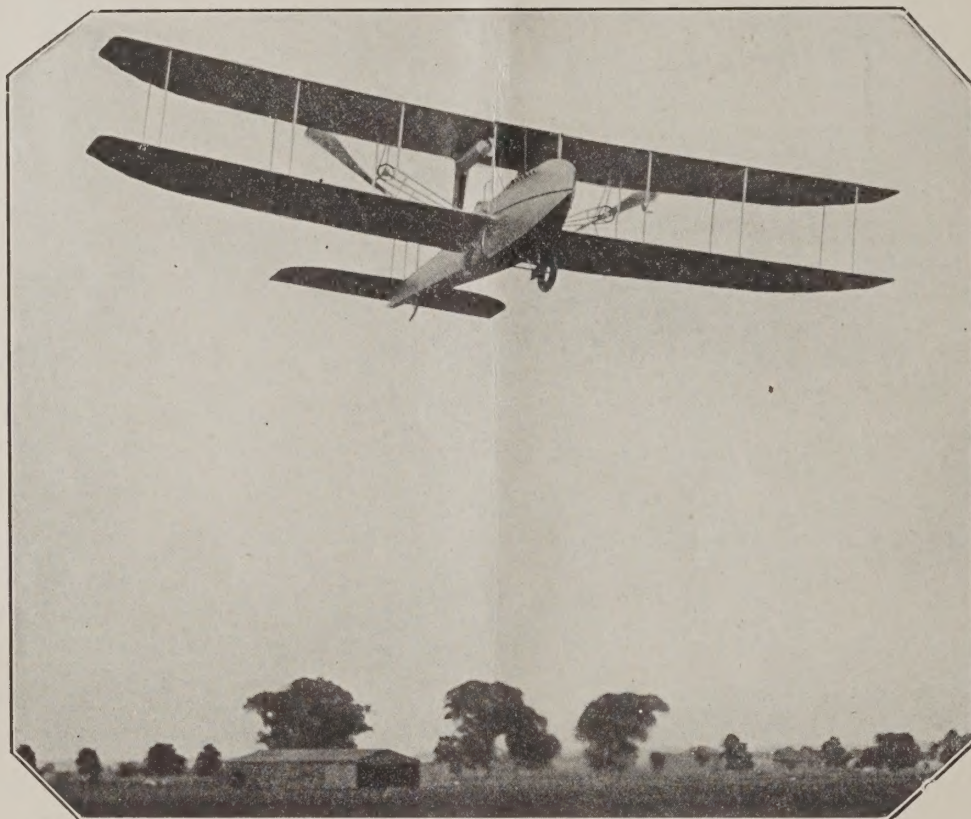
**MARBLEHEAD, MASS.**



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# Wright Aeroplanes

FOR SPORT, EXHIBITION OR MILITARY USE,  
OVER LAND OR WATER now embody the improve-  
ments that have been suggested by the experiments,  
conducted during the past ten years



*The New Wright Model "HS"*  
MILITARY FLYER

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## THE WRIGHT COMPANY

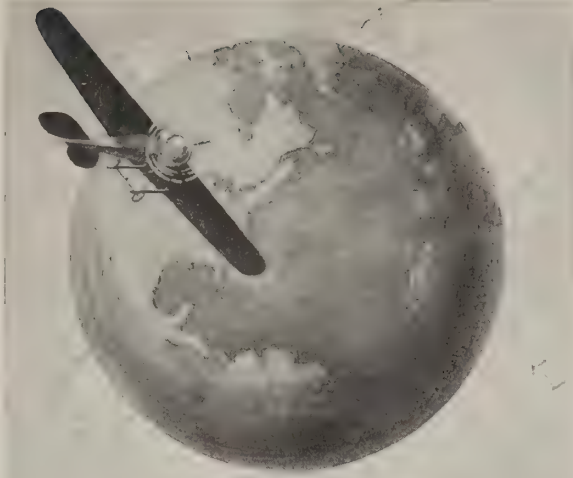
(The Wright Patents)

Dayton, Ohio

N. Y. Office, 11 Pine St.



## The Wonderful Prospects of American Aeronautics



## The Immediate Market for Aeronautical Products Is World-wide

By Henry Woodhouse, Managing Editor of "Flying"

**T**HE prospects of American aeronautics are world-wide and wonderful and new developments take place constantly which open new prospects. For instance, after this article had been written word was received that the Navy Department has ordered the Naval Militia throughout the country to organize aviation corps, the Navy Department to provide two aeroplanes and spare parts to each division, which means about one hundred aeroplanes to be employed in this plan alone.

While the most immediate and substantial demand is for military aeroplanes, that does not by any means constitute the most substantial prospect of the American aeronautical industry. Aeronautics is fast becoming related to every line of human endeavor, and is about to extend from the military period into the period of aerial navigation, as a popular sport and for utilitarian purposes.

Tremendous progress has been induced almost entirely by the military authorities, by the \$100,000,000 spent by the countries of the world in the past three years in military aircraft—and further developments are being stimulated by the \$200,000,000 appropriated for military aeronautics by the nations of the world. The countries want the most efficient kind of aircraft, whether aeroplane or dirigible; they want aircraft that can fly fast, carry heavy loads, cover long distance, are reliable and safe. They have spent \$100,000,000 and are spending \$200,000,000 more and will spend more after, because they want the most efficient. Air craft gain in efficiency as fast as money and thought is spent upon them and will, it seems, keep on gaining efficiency endlessly, with a rapidity that will soon bring veritable aerial dreadnaughts which will be as wonderful and efficient in their three elements as the present dreadnaughts are in their one. As the world has many difficult problems of transportation which can best and most economically be solved by the employment of aircraft, commerce will employ for peaceful purposes what the armies and navies have developed for war purposes.

United States is the only country where the government has given little support towards developing the art, therefore the movement has been less extensively developed. But the standard attained in the construction of aeroplanes has been as high as the European; in one respect, in the developments of flying boats and hydroaeroplanes, the American standard has been much higher. It was set, in fact, by this country—and the European countries have been buying their flying boats and hydroaeroplanes in this country.

### *1,000 Aeroplanes for Europe*

Inquiries received from European governments show that aeroplanes are wanted in large number by both the nations at war and those not at war. The inquiries show a total demand of about 5,000 aeroplanes and as many additional motors, so it is a fairly conservative estimate to put the possible demand which American constructors can supply in the coming two years down to 1,000 aeroplanes and 1,000 motors.

### *300 Aeroplanes for the U. S. Navy and Naval Militia*

The valuable services rendered by aeroplanes in the war, in connection with naval operations, in scouting, attack, directing

gun fire, submarine detecting, and other valuable services, have extended the purpose of the naval air service and increased the number of aeroplanes necessary to make the air service [an efficient auxilliary of the navy.

The United States Navy will need at least 200 aeroplanes to give the Navy an air service of any value. The General Board of the Navy recommended an appropriation of \$5,000,000 for aeronautics. Congress and the Senate allowed \$1,000,000—with provision for the appointment of a special committee to investigate the use of aircraft in the war, and report, the report to be used as a guide for next Congress.

It does not require undue prescience to foresee that the committee will make a report that will lead to the establishment of an extensive aeronautical organization. Allowing two hundred aeroplanes as the possible acquisitions of the U. S. navy in the coming two years is a conservative allowance.

The order issued by the Navy Department to all the divisions of the Naval Militia to organize aviation corps, the Navy Department to supply two aeroplanes, spare parts, and instructors, increases the number of aeroplanes to be acquired by the Navy by one hundred.

### *Water Flying to be Popular Sport*

Water-flying promises to become popular this summer. A number of prominent sportsmen have ordered, and others are planning to order flying boats and hydroaeroplanes for the coming season. This is not surprising. Faster than any water or land craft, the airboat carries its passengers over the water or on the surface of the water and can cut across promontories and soar over land and even mountains to reach other bodies of water, like nothing else except the duck or the seagull. It does these things easily at a speed of from 50 to 80 miles an hour, which is greater by many miles than the fastest marine craft.

Thus it supplies the keenest and most thrilling of sports. As a matter of fact, the average yachtsman is convinced as soon as the airboat flies past his yacht or racing boat. Given reasonable safety, the average sportsman will favor the fastest craft—and the airboat is the fastest marine craft.

Next year will see this new sport develop widely, as it will go beyond the United States, to South and Central America and Canada, and if the great demand causes a lowering of prices for machines, hundreds will acquire them, where now only wealthy people can afford them. As airboat cruises and races will be held, this water sport will indeed become popular.

### *Long Distance Aeroplane Races*

Long distance races for land and water aeroplanes, to take place in July and August, are under consideration. The trans-continental races are being considered by the Lincoln Highway and the Panama-Pacific Exposition and developments in the past week almost assure that the project will be realized. This will afford a supreme test to the aviators, aeroplanes, and motors, and will do much to popularize aeronautics, and demonstrate the practicability of using aeroplanes for carrying mail.







# American Aeronautical Engines

An Important Parallel Between the Development of the Engines of the Automobile and the Aeroplane

By N. MacCoull, M. E.

THE aeroplane engine presents some of the most difficult problems known in mechanical engineering. The automobile engine has presented innumerable difficulties to the designer and though the best engineering brains in the country have been concentrated on these problems for several years, there is still possible an enormous development. It seems as though the greater the progress, the greater the possibilities that are revealed for still further progress.

Because of the similarity between the engines of the automobile and the aeroplane, most of the development of one will assist in the development of the other. The chief differences lie in the fact that the aeroplane engine must be run continuously at its rated load, while the other is but rarely required to do so except in races. This in itself is enough to make the design of the aeroplane engine more difficult, and the reduction of weight, which is so imperative with this type of engine, makes the problem more difficult still. Hence it is interesting to see how the designers of engines now on the market have handled their problems.

With this in mind, all information that can be obtained in regard to the design of American aeronautical engines will be published in *Aerial Age*—probably one engine each week until all the leading types have been described. Where important information is not given it will be understood that the manufac-

turers for reasons of their own, were unwilling to make it public.

Up to the present but little specific information in regard to these engines has been published, and buying them has been much like ordering a suit of clothes by mail. The buyer has been unable to learn the important details of his purchase until he has bought it. Now that governments promise to be the greatest supporters of the aeronautical industry, there will probably be a change in the publicity given to technical details. The industry will undoubtedly follow the lead of the automobile, where publicity has been found of such great advertising value that many manufacturers spend enormous sums of money in order to have some little improvement over their competitors,—which they are sure to make a strong talking point. It seems also to be a great satisfaction to a manufacturer to be able to say: "we were the first to adopt so and so, and it has been so valuable that all good makes have been compelled to follow our lead or be out of date."

To give an approximate idea as to the engines that will be described, the following table has been prepared, which gives most of the well-known American engines. It is possible that some makes have been overlooked, or that some of the specifications are now out of date;—if so, correction will be made when the detail descriptions are given in subsequent issues.

Make	Model	Bore and Stroke	Rated Horse Power	Rated Speed	CYLINDERS		Carburetor	Cooling	Oiling	Ignition	Weight of Motor
					No.	Arrangement					
Ashmusen			70 105		8 12	Horizontal Opposed		Air Air			
Boland		4 x4	60		8	"V"	Mayer	Water	Force Feed	Bosch or Mea	262
Curtiss	OX	4 x5	90-100	1500	8	90° V	Schebler	Water	Force Feed	Bosch	320 met.
	OX	4 1/4 x5	100	1400	8	90° V	Schebler	Water	Force Feed		
	VX	5 x7	160	1500	8	90° V	Schebler	Water	Force Feed		
Gyro		4 1/2 x6	60	1200	5	Radial revolving!	Mixing Valve	Air	Oil in gas	Bosch	170
		4 1/2 x6	90	1200	7		Mixing Valve	Air	Oil in gas	Bosch	215
		4 1/2 x6	110	1200	9		Mixing Valve	Air	Oil in gas	Bosch	270
Hall-Scott	A-1	4 x5	32	1500	4	Vert.	Stromberg	Water	Force & Splash	Mea	165 Comp.
	A-2	4 x4	60	1500	8	90° V	Stromberg	Water	Force & Splash	Mea	260 Comp.
	A-4	5 x5	100		8	90° V	Stromberg	Water	Force & Splash	Bosch	
Kemp	H-6	4 1/4 x4 1/2	55	1150	4	vert.	2 Zenith	Air	Splash	Bosch	192 Comp.
	I-4	4 1/4 x4 1/2	35	1150	6	vert.	Schebler	Air	Splash	Bosch	272 Comp.
	J-8	4 1/2 x4 1/4	75	1150	8	90° V	Schebler	Forced Air	Splash (?)	Mea	310 Comp.
Kirkham		4 1/8 x4 3/4	50		6	vert.	Choice	Water	Force & Splash	Simms	235
		4 7/16 x4 7/8	55		6	vert.	Choice	Water	Force & Splash	Simms	205
Macomber		4 1/4 x4 1/4	50		7	Horizontal revolving	Choice	Air		Bosch	240 Comp.
Maximotor	A-4	4 1/2 x5	40-50	1500	4	vert.	Schebler or Kingston	Water	Force & Splash	Mea	200 Comp.
	B-4	5 x5 1/2	60-70	1500	4	vert.	Schebler or Kingston	Water	Force & Splash	Mea	260 Comp.
	A-6	4 1/2 x5	70-80	1500	6	vert.	Schebler or Kingston	Water	Force & Splash	Mea	300
	B-6	5 x5 1/2	90-100	1500	6	vert.	Schebler or Kingston	Water	Force & Splash	Mea	370
	A-8	4 1/2 x5	120	1500	8	90° V	Schebler or Kingston	Water		Mea	400
	B-8	5 x5 1/2	150	1500	8	90° V	Schebler or Kingston	Water		Mea	450
Roberts		4 1/2 x5	50		4	vert.	Kingston	Water	Oil in gas	Bosch	190
		4 1/2 x5	75		6	vert.	Kingston	Water	Oil in gas	Bosch	260
Sturtevant	D-4	4 1/2 x4 1/2	50	1400	4	vert.	Zenith	Water	Force Feed	Bosch	220
	D-6	4 1/2 x4 1/2	80	1400	6	vert.	Zenith (2)	Water	Force Feed	Bosch	320
	5	4 x5 1/2	140	2000	8	90° V	Zenith (2)	Water	Force Feed (2 pumps)	2 Bosch	550
Wright	6-60	4 3/8 x4 1/2	60	1400	6	vert.	Zenith (2)	Water	Splash		305 Comp.



## Latest American Military Type Aeroplanes



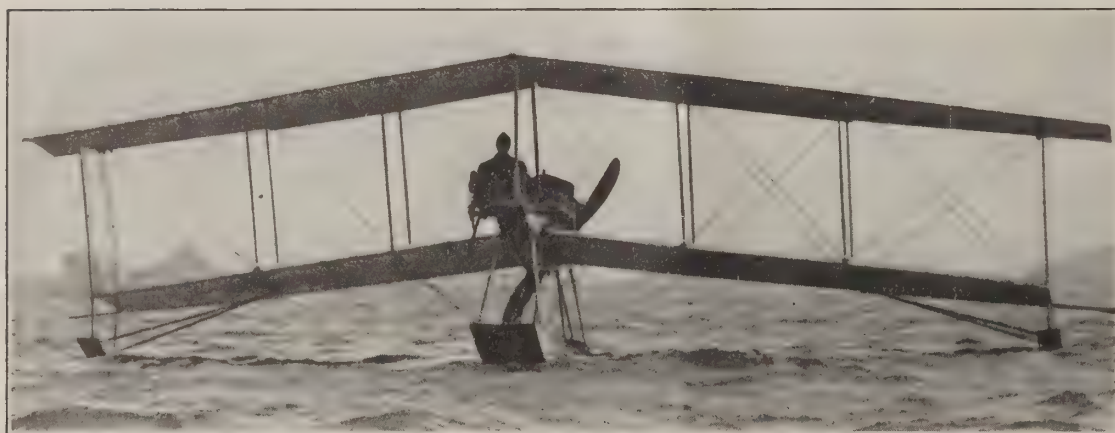
**The Wright Military  
Biplane in Flight**

*An interesting type having the engine mounted in front and driving through shaft and chains the two propellers situated in the rear. It is fitted with a 60 h.p. Wright motor.*



**The Curtiss 160  
H.P. Military  
Tractor**

*A very powerful machine of great efficiency and splendid range of vision. Note the position of the pilot and passenger in back of the main planes.*



**The Burgess-  
Dunne Seaplane**

*A distinctive inherent stability type which has found great favor in this country. It has neither rudder nor tail and derives its balance from the shape of the planes.*



**Martin Military  
Tractor**

*A particular clean-cut design of remarkable efficiency and wide range of speed. Note the deep streamline fuselage and low head resistance.*



Latest American Military Type Aeroplanes

By Walter H. Phipps

CONSIDERING the substantial crop of latest American aeroplanes one cannot doubt that the American aeroplane constructors are ready to meet any demand for machines for sport, military, and general purposes, and to deliver as efficient machines as can be had anywhere. The appended photographs and table of characteristics of military types show clearly the progress which has been made, by American constructors.

The new Burgess machine is a development of the Dunne system of inherently stability as applied to a modern and well constructed aeroplane. The machine has no tail but the wings are swept back at an angle of 33 degrees and have a constantly decreasing angle from the centre to the tips. This arrangement gives the Burgess-Dunne a large amount of fore and aft stability, and at the same time accomplishes inherent lateral stability. The control is operated by flaps placed at the end of the wings which govern the fore and aft and lateral control as well as the steering. The seats are arranged in tandem with duplicate control levers.

Provision is made for wireless and a machine gun which is rendered very effective owing to the wide range of vision and arc of fire afforded by the retracting wings.

Power plant consists of either the 100 H. P. Curtiss, 130 H. P. Salmson or 110 H. P. Gyro motor.

The machine is designed to be operated either as a land machine or hydro-aeroplane provision being made for quickly attaching or detaching a hydroplane float.

The latest Curtiss machine is an improved tractor biplane of particularly substantial design and exceptional efficiency. The fuselage is of regulation construction fairly deep in front with the engine and tanks streamlined off by a very neat cowl. The seats for the pilot and passenger are arranged tandem, with the passenger's seat placed well forward and the pilot's seat just in back of the rear beams. This arrangement affords a wide military vision. The tail consists of the usual flat non-lifting stabilizer with twin elevator flaps. The Curtiss O X, O XX or VX models of 90, 110 and 160 H. P. respectively compose the power plants.

The new Gallaudet machines are both tractors with a very pronounced back-sweep to the wings. The fuselages are approximately oval in section and are constructed of mahogany sheeting which entirely does away with the necessity of wire bracing. The seats for the pilot and passenger are arranged tandem with the pilot placed well back in a position which affords him an unobstructed view downward. The power plants consist of either Gyro or Gnome motors mounted on special bearings built into the noses of the fuselages.

As will be seen from the accompanying photograph the new Heinrich tractor is of very pleasing design and sound construction. A striking feature of this machine is the short and very broad fuselage which accommodates the pilot and two passengers arranged in tandem. The wings are slightly staggered and back-swept, which seems to add greatly to the stability.

Equipped with a 110 H. P. Gyro the Heinrich tractor climbs at an astonishing rate and seems to easily attain a speed of 80 miles an hour.

Another very promising machine is the new experimental 80 H. P. Huntington Military tractor. This machine has a modified Nieuport fuselage and chassis and is exceptionally well built and of very clean cut design. At its first trials piloted by Harold Kantner the machine flew very successfully and more than realized the expectations of its very conservative designer, Mr. Howard Huntington.

The power plant consists of an 80 H. P. Gyro which gives the machine a splendid speed range.

The new Martin tractors have proved remarkably efficient and afford a splendid example of what clean cut design will accomplish. As can be seen from the accompanying photograph, everything possible has been done to eliminate head resistance and increase efficiency. In this respect the fuselage has been streamlined off to such a degree that only the pilot and passenger's heads protrude above the well shaped cowl. The landing chassis is original, consisting of two main wheels and a single skid with two auxiliary protective wheels mounted in front of the propeller to prevent any possibility of capsizing. Standard power plants are either Curtiss or Hall Scott motors of 100 H. P.

The new Thomas military tractor is another example of modern American design which has proven very efficient. The fuselage is of regulation construction and has a section which is wider at the top than at the bottom. The main planes, which are both of equal span, are slightly staggered and carry the ailerons attached to the outer extremities of both lower and upper wings. The landing chassis consists of regulation two skid and two wheel type. Power plants are either Curtiss or Austro Daimler motors of 100 and 90 h. p. respectively.

The new Wright military machine is interesting as it combines the features of the enclosed fuselage type with motor in front and the propellers in the rear. The fuselage, which is boat shaped, is hung low down between the wings and carries the six cylinder 60 H. P. Wright motor mounted in the nose, with the pilots and passenger's seat arranged immediately in back. The tail plane follows regulation Wright practice and is mounted on the rear of the fuselage with the rudder above.

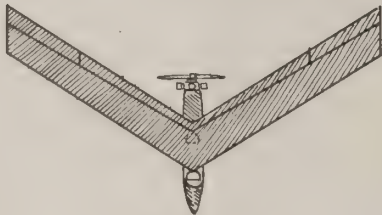
TABLE OF CHARACTERISTICS OF THE LEADING AMERICAN AEROPLANES

MAKE	SEATS	SPAN		Chord	GAD.	AREA	Length over all	TYPE OF BODY	CHASSIS	Lateral Control	MOTOR					Fuel Cap
		TOP	BOT.								Make	Type	H. P.	Bore	Stroke	
Burgess-Dunne P. B	2	46'-2"	46'-2"	6'-0"	6'-0"	550 sq. ft.	20'-6"	Nacelle	2 skids	Flaps	Salmson	9 cyl. Radial	130	4 1/2"	5 1/2"	4 1/2 hrs.
Christofferson T. B	2	48'-0"	34'-0"	6'-0"	6'-0"		27'-0"	Fuselage	3 wheels	Ailerons	Hall-Scott	8 cyl V	100	5"	5"	4 1/2 hrs.
Curtiss T. B	2	40'-0"	30'-0"	6'-0"	6'-0"	350 sq. ft.	26'-4"	Fuselage	2 wheels 2 skids	Ailerons	Curtiss	8 cyl V	90-100	4"	5"	4 hrs.
Heinrich T. B	2	35'-0"	24'-0"	5'-0"	5'-6"	300 sq. ft.	24'-0"	Fuselage	2 wheels 2 skids	Ailerons	Gyro	9 cyl. Rotary	110	4 1/2"	6 "	4 1/2 hrs.
Huntington T.B	2	36'-0"	36'-0"	5'-0"	6'-0"	352 sq. ft.	26'-0"	Fuselage	2 wheels 1 skid	Ailerons	Gyro	7 cyl. Rotary	80	4 1/2"	5 1/2"	5 hrs.
Gallaudet T. B	2	34'-0"	34'-0"	6'-0"		350 sq. ft.	25'-0"	Mahogany Fuselage	2 wheels	Small Flaps	Gyro	7 cyl. Rotary	90	4 1/2"	6 "	4 hrs.
Gallaudet T. B	2	30'-0"	30'-0"	6'-0"	6'-6"	300 sq. ft.	25'-0"	Mahogany Fuselage	2 wheels	Small Flaps	Gnome	14 cyl. Rotary	100	4 1/2"	4 1/2"	4 hrs.
Martin T. B	2	40'-0"	40'-0"	5'-0"	6'-6"	400 sq. ft.	26'-0"	Fuselage	2 large wheels 2 auxiliary whs	Ailerons	Curtiss or Hall-Scott	8 cyl V 8 cyl V	90-100 100	4 " 5 "	5 " 5 "	5 to 8 hrs.
* Mayo T. B	2	39'-11"	39'-11"	6'-0"	5'-10"	455 sq. ft.	29'-4"	Fuselage	2 skids 2 wheels	Ailerons	Gyro	7 cyl. Rotary	90	4 1/2"	6 "	5 hrs.
Thomas T. B	2	36'-0"	36'-0"	5'-0"	5'-0"	360 sq. ft.	26'-0"	Fuselage	2 skids 2 wheels	Allerons	Austro-Daimler	6 cyl. Verticle	90	4 1/2"	5 1/2"	5 hrs.
Wright P. B	2	32'-0"	32'-0"	6'-0"	6'-0"	350 sq. ft.	26'-0"	Fuselage motor in front	2 skids 2 wheels	Warping	Wright	6 cyl. Verticle	60	4 1/2"	4 1/2"	4 hrs.

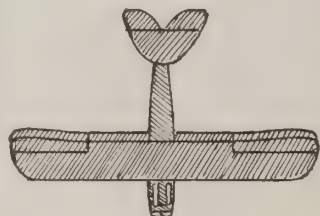
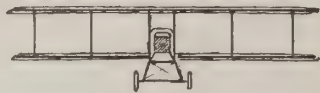
\*Not yet tested. T. B=Tractor biplane. P. B=Pusher biplane.



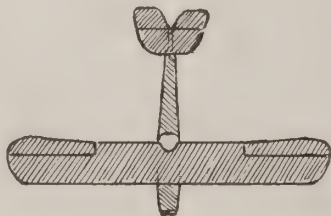
## Latest American Military Type Aeroplanes



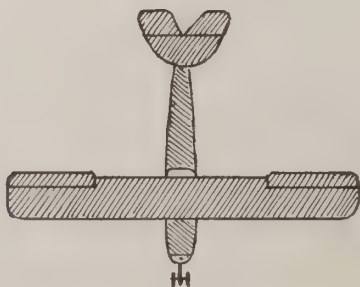
BURGESS-DUNNE



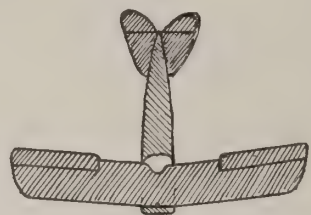
CURTIS



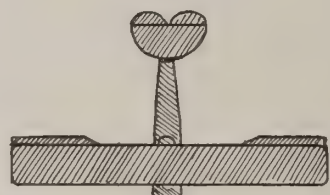
THOMAS



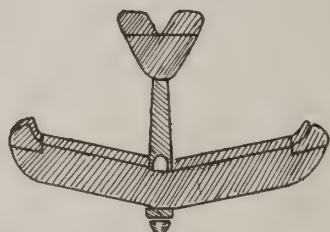
MARTIN



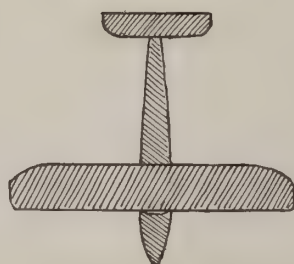
HEINRICH



HUNTINGTON



GALLAUDET



WRIGHT



### Heinrich Military Tractor Equipped with 110 H.P. Gyro

A distinctive all American machine possessing remarkable stability combined with ease of control, large carrying capacity and a big range of speed. Note the slight back-sweep to the wings.



### The 90 H.P. Gyro-Motored Gallaudet Military Tractor

An original type possessing inherent stability combined with great efficiency. Note the mahogany fuselage, also the position and back-sweep of the wings.

(Cut Courtesy of Flying)

### The New Thomas Military Tractor

A particularly pleasing design which has given splendid results in recent tests. It is equipped with a 90 h.p. Austro Daimler motor.



### Huntington Tractor Scout

An exceptionally efficient machine, with 80 h.p. Gyro motor. A unique adaptation of the efficient Nieuport fuselage, with an improved landing gear, to biplane wings.

The pilot, Harold Kantner, gave this machine its first trial, on March 11th, in a wind velocity of 25 miles per hour.



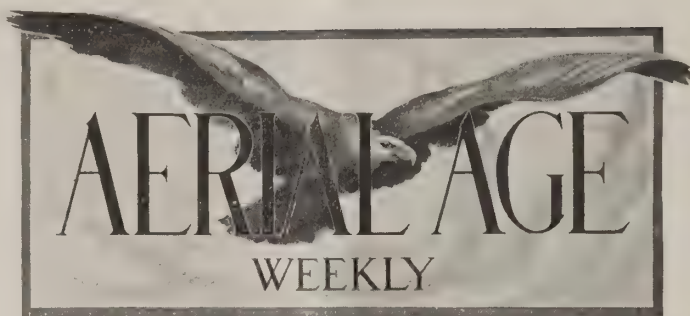
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SUBSCRIPTION RATES:  
Domestic, \$4.00 per year  
Foreign, \$5.00

ADVERTISING RATES:  
One page \$80.00, Half \$45.00,  
Quarter \$25.00, Eighth \$14.00,  
Sixteenth \$8.00.

Discounts: for 13 consecutive inser-  
tions, 10%; for 26 consecutive inser-  
tions, 15%; for 52 consecutive inser-  
tions, 17%.  
Cash discount, 3%, 10 days.  
For other rates see Classified  
Department.

PUBLISHED WEEKLY BY THE AERIAL AGE COMPANY, Inc., 116 West 32nd Street, New York City  
Application made for entry as second-class matter at the Post Office at New York, N. Y.

VOL. I.

NEW YORK, MARCH 22, 1915

No. 1

## Navy to Construct Aeroplanes!

**A**s *Aerial Age* is about to go to press a Washington despatch announces that the Navy has prepared plans for two factories, each to cost about \$30,000, to be located at Philadelphia and New York. "Each is to be capable of turning out two or three machines a month at a cost of \$6,000 apiece," adds the report, "and Congressional approval is all that is needed."

The necessity of going to press within a few hours precludes lengthy consideration of the matter, but time is not required to find the reasons why it would be inadvisable for the Navy to take this step.

An investigation was conducted at the close of last year and the following report was made to those members of the House of Representatives who, not knowing the status of American aeronautics, and being unaware of the fact that American constructors have been supplying aeroplanes and motors for the navies of other nations, were misled by incomplete reports to believe that American aeroplane and motor constructors are not in a position to supply the U. S. Navy. Secretary Josephus Daniels transmitted this report to the House of Representatives:

December 14, 1914.

From: Bureau of Construction and Repair and Bureau of Steam Engineering.  
To: Navy Department (material).  
Subject: Aeroplanes.

Reference: (a) Department's memorandum, December 12, 1914.

1. While the initial successes in air-craft work were attained in this country, the design and construction here on a successful scale are still in the development stage. Foreign countries are far in advance of our builders. The marked progress of this class of work abroad is due mainly, if not solely, to the encouragement given to private manufacturers by foreign Governments. While there are only a few companies in this country that can at present be considered as competent designers and builders, their number is sufficient to stimulate competition and bring about great improvement in design, provided there is a reasonable amount of Government business in sight. Furthermore, there are other companies that are only awaiting the existence of sufficient business to develop their ideas along the same line.

2. While the Government has resources, including a few officers specially trained in aeronautical-design work, this force can at present be considered as only a nucleus and is capable of carrying on only a very limited volume of work. It would be a tremendous loss to the advancement of aeronautical work to lose the ideas and results of private invention and experiment.

3. In view of the above and in view of the extremely hazardous nature of air-craft work, involving the loss of life and property, if not designed and manufactured with extreme care and along what experience has taught to be the safest lines, the bureaus believe that it would be a great mistake for the department to undertake at the present time a manufacture of air craft except on an experimental scale.

4. Preparations have already been under way for about two years looking to the design and construction of an experimental machine, with a view to developing ultimately the necessary plans, specifications, and detail instructions for the manufacture of aeroplanes, both hulls and power plants, by private manufacturers, including shipyards, and by navy yards in an emergency. This experimental work includes a continued series of laboratory experiments on a large scale at the navy yard, Washington. The preliminary work toward the experimental construction above mentioned is already in hand, and it has been the bureaus' intention to take up the manufacture of such an experimental aeroplane at the Washington Navy Yard in the near future.

5. The establishment of a Government plant for the general manufacture of air craft would require a complement of officers that can ill be spared at the present time, not only because the Navy has a very limited number of specially trained designers in this class of work, but because such a plant would call for the diversion from actual flying work of many of the most competent operators. As stated above, the establishment of such a plant would tend greatly to discourage the valuable initiative and resources of private manufacturers, who should be encouraged and stimulated as a most valuable asset not only in the development of air craft but also for turning out such craft in quantities in time of an emergency. Any Government plant which could be established in the near future would be entirely inadequate in war time, as air craft would be required in large quantities in such an emergency.

6. It is therefore recommended that the utilization of existing plants for aeroplane work be confined to the construction of one or more experimental aeroplanes on the department's design at the navy yard, Washington, and the construction of an aeroplane engine at one of the navy yards, with a view to the preparation of departmental plans, specifications, and manufacturing instructions in sufficient detail for use in an emergency.

7. However, if the department directs the establishment of a plant for the manufacture of air craft, it is recommended that the work be done either at the navy yard, Philadelphia, or the navy yard, Norfolk, these yards having a moderate amount of space for testing work. A considerable portion of the necessary plant is already available at these yards, but certain special tools would be required; some delay would be experienced in training a special force of mechanics, who would have to be instilled with the supreme importance of perfect workmanship. The approximate estimated cost of putting the shops at one of these yards in order and establishing an air-craft factory with a capacity of two or three machines per month is placed at \$30,000. The estimated cost of turning out such machines under the present navy-yard cost system is about \$6,000. This does not include the cost of the commissioned personnel, classified employees, leave, holiday, and disability, and certain other overhead charges not at present included in the cost of work, and does not include the question of patent rights; all of these would probably run the actual cost much above the above figures.

(Signed)

SCHAEFER, Acting.  
R. S. GRIFFIN.

The present time is not the time for experimentation, much less than it was last December, when this report was written. It is not the time to try to find out what England paid hundreds of thousands of dollars in 1909-1912 to find out—that experimentation leads to continuous procrastination in regard to organization of actual flying corps. So long as the Royal Aircraft Factory was experimenting the organization of flying corps had to wait. At the end of four years the expenditure had amounted to close to one million pounds and the air service consisted of a mere handful of officers and mechanics and a score of machines. The criticisms were not sufficient to make the authorities realize their duty. The authorities persisted, and the delay continued; and because there was no other support to the aeronautical trade private manufacturers had no incentive to develop their machines for anything else except for exhibition purposes. It required the scare which awakened the entire British nation to force the authorities to take advantage of the ingenuity, experience, and facilities of private manufacturers to build the air fleet. It was fortunate for England that public opinion, realizing this mistake in time, forced the issue. A while longer and England would have been caught wholly unprepared, without manufacturers and facilities for building her aircraft which have proved so indispensable.

It may be added that the very Mercedes motor which the U. S. Navy has tried so hard to acquire was developed by a private concern with the money given by the German Government in prizes and direct subsidies to the German motor builders. This also stands true in the case of the Salmson motor which the U. S. Navy also tried to acquire.

In these critical days when the nation—which, it must not be forgotten, pays the bills—is alarmed, and cries daily for sufficient armament; when national defense is discussed in homes, clubs, stores, churches—everywhere, and by everybody; in these days when the country faces daily—as Mr. Robert Lansing, the counsellor of the Department of State pointed out in his address at the Amherst annual—situations threatening the welfare and ideals of the nation; it would be tragic to have the work of organizing flying forces and providing the Navy's aeronautical needs delayed and the meagre resources in men and funds spent in experiments.

## Success of the Transatlantic Type Flying Boats

The five Curtiss flying boats of the transatlantic type, which followed the first, had only been in use in the British Air Service for a number of days when a new order for an additional half dozen was given. No additional proof of the thorough efficiency of this type is needed.



## Italy Placing Order for 800 Aeroplanes Here?

THE New York Times has received a cable from a reliable correspondent advising that an order for 800 aeroplanes is to be placed with American constructors. The Times tried to get confirmation here and could not. Believing in the reliability of its correspondent it published the report nevertheless.

"Could Italy employ this number of aeroplanes, even though it does not participate in the war?" was one of the questions put by the Times representative to one of the editors of *Aerial Age*. The reply was affirmative. Italy—and any other country for that matter—not only can, but must give to the different branches of the military organization the number of aeroplanes necessary to increase their efficiency. Italy can distribute more than 800 aeroplanes, as follows: A squadron of each "scout," "fighting" and "cavalry auxiliaries," each squadron of eight aeroplanes, with additional machines for reserve, for every army division, and for the colonial forces in Tripolitania and Eritrea; one aeroplane to each battery for "spotting" artillery fire; two seaplanes, and spare parts for two more, for each battleship; three squadrons of "scouting" and "fighting" seaplanes to every naval station. As the fighting nations are, as fast as they can obtain them, employing aeroplanes in the different armies, Italy will have to do likewise. When she does she will order twice eight hundred aeroplanes. Incidentally, the entire cost will only amount to the price of a dreadnaught!

## Scrap Them

There are about one hundred motors in this country between three and five years old, American and foreign, that should be scrapped. They are a danger to the aviators and a reflection to up-to-date aeronautics. Scrap them!

## A Season of Records

Lieutenant Byron Q. Jones, of the Army Aviation Corps, has opened, we believe, a season of records. Other crack pilots are pluming their wings, and good machines and motors are available in number. So we may expect the passing of some of those grey-bearded records that were made in the days of exhibition flying.

## Success Due to Aeroplanes

James Dunn telegraphs to the *Daily Mail* from Rotterdam: "The British success at Neuve Chapelle and Epinette was due largely to the wonderful work of the allied aeroplanes. Not a German gun was laid, not a body of troops moved without being detected by the eyes of the British army.

"German officers in Bruges admit their air service is hopelessly outclassed in numbers, daring and intelligence by the Allies. From the sea to Ypres the sky is swept by aeroplanes practically every day, the British and French airmen competing in feats of skill and daring while the Germans no longer face duels in the air, past contests having proved disastrous."

## French Aeroplanes Made 10,000 Flights

Little has been heard of the activities of French aviators in the war and their number and number of aeroplanes available is unknown. But the following official communiqué gives an idea of their number and activities:

"Statistics covering the aerial operations from the beginning of the mobilization to January 31 of this year show the following:

"During these six months the aerial squadrons made about 10,000 reconnoitring flights, corresponding to more than 18,000 hours of flight. These flights represent a distance covered of 1,080,000 kilometers (1,125,000 miles), or, in other words, twenty-five times around the world.

"These remarkable results were not obtained without sorrowful losses, which were at least equal to and in many cases heavier than those suffered by other branches of the army so far as the dead, wounded and missing are concerned."

## The Wingless American Eagle

If the American national bird cannot fly—what sort of a bird is it? Surely not an eagle!

When the United States Army acquired the Wright flyer in 1909, and for a year the United States was the only nation possessing an aeroplane in its military organization, we pointed with pride to the fact that the American Eagle was the only national bird that was actually growing wings.

Since then, however, the European Eagles have grown wide, robust wings, and their flights compass the European Continent and are extending far out at sea. Their substantial wings enable them to fly daily over hundreds of miles of armed troops, fortifications, armed fleets, and blockades, to strike their prey in the

most vulnerable places. On the other hand, the wings of the American Eagle have not even grown to the size of a penguin's wings.

If it cannot fly what sort of a bird is the American bird? Is it not at the mercy of any winged eagle that may covet its domains?—ALAN R. HAWLEY, President Aero Club of America, in *Flying*.

## The Active Airman

(Editorial from the Review of Reviews)

Forty aeroplanes, British and French, engaged in a simultaneous raid of destruction against the German bases in Belgium on February 16. And a few days before, thirty-four machines had flown on a similar expedition. The bomb-dropping air raids indulged in by both the Germans and the Allies between points in Belgium and Dunkirk and Calais in the north of France have been very frequent. These operations bring strikingly to public attention the activities of the airmen in the war. And exceedingly active they have been ever since hostilities began. Five thousand aeroplanes, more or less, and over a hundred dirigible balloons have been traversing the air lanes over every part of the entire War Zone—in Belgium, France, Germany, Austria, Russia, and the Balkans; even in Africa, and in China, over Tsing-Tau, before that place surrendered. In all climates and in all kinds of weather, day and night, the scouts of the air have been busy. The value of aerial reconnoissance has proved incalculable, eliminating the element of surprise from military operations. Only last month, when von Hindenburg, in East Prussia, had all but surrounded a Russian army, the alert eyes of the Russian airmen discovered the enveloping movement in time to prevent complete annihilation. The discovery of the enemy's batteries and the directing of artillery fire in these days of long-range guns and clever methods of concealment have made the aviator the eye of the "man behind the gun." Each time he prevents the waste of a single shot from a big gun he saves the cost of his aeroplane. And the usefulness of the aircraft is being gradually extended. For instance, at Craonne, last month, aviators prepared the way for a French charge by dropping bombs on the Germans and completely demoralizing them.

## Encouraging Aeronautics

(Editorial in the Washington Post)

Is the United States waking up at last? There has been so much faultfinding with modern devices, so much anxiety to wait until the "final type" of airship and battleship might be evolved, that it comes with refreshing relief to note the favorable report made by the House naval committee on the Roberts resolution to authorize the appointment of an advisory committee on aeronautics.

It seems but a few months since there was a pretty definite impression in Congress that the science of aeronautics was in its infancy, and that no practical use could be made of the aeroplane or dirigible. The frequent accidents in which the German dirigibles were involved added to the impression of amateurishness.

The war has demonstrated, however, that air craft are a very important factor in military equipment. The terror spread through England at the approach of a Zeppelin doubtless has been of service to Germany. If, as maintained by the British war office, the Zeppelin raids have been of little military importance in that they did not result in any great loss of life or property, nevertheless the moral effect has been widespread and significant.

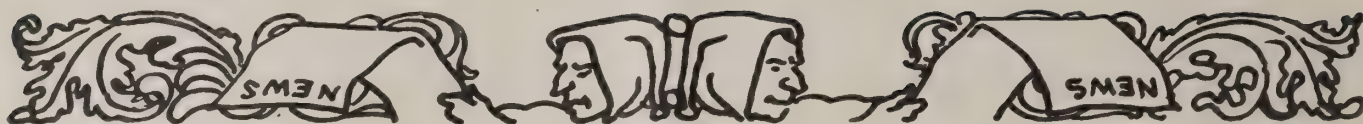
Not even the question of military importance arises, however, when aeroplanes are considered as war scouts. The nation which had found itself without aeroplane scouts at the beginning of the present war would have been at a great disadvantage. It would have been almost as much of a handicap as to be without telegraph wires.

The advisory committee which the naval affairs committee proposes to establish would be appointed by the President, who would select men from the army and navy, the Smithsonian Institution, the bureau of standards, and from other sources where skilled men could be found. The committee would engage in experiments which, no doubt, would result in many improvements in the present type of air craft.

There is no reason why the United States should not merely equal, but excel other nations in the production of air scouts. The aeroplanes used in Europe have at least demonstrated that bombs can be dropped from them, and in addition they can halt the depredations of rival air craft.

If the nations of Europe have advanced so far, while the United States has still been wondering about the utility of aeroplanes in time of war, it is time for this government to bestir itself and see whether it is not possible for the inventors of this country, who originally established the science of aviation, to go ahead of Europe. A little encouragement from Congress will go a long way to that end.





### Aeroplanes for the Naval Militia

An order from the Militia Division of Naval Affairs, Washington, D. C., signed by Commander F. B. Bassett, has been sent to the heads of the Naval Militia Divisions, requesting them to organize aeronautical corps. The Navy Department is to supply each division with two aeroplanes, spare parts, and instruction; the militia is to supply two officers and six mechanics.

### World Record by Army Aviator.

Lieutenant Byron O. Jones, of the Army Aviation Corps, established a new world record on March 12th, at San Diego, California. Lieutenant Jones ascended at two minutes past ten A. M. with two passengers in a Burgess tractor modified by changes made by Mr. Grover Cleveland Loening, the Army aeronautical engineer, and remained in the air until seven minutes past five P. M. This flight of seven hours and five minutes exceeds the old world record by twenty minutes. It is also expected to establish American records for altitude with three passengers; and endurance with two passengers. The details of the machine and motor used will be given with the official report of the homologation of the records by the Aero Club of America. It will be remembered that Lieut. Jones is also holder of the record of 8 hours 53 minutes continuous flying. This record was made with a Martin tractor equipped with a Curtiss motor.

### U. S. Army to Get Squadron of Curtiss Tractors.

Eight Curtiss tractors and extra motors, the flying equipment of a squadron, have been ordered for the U. S. Army aviation section. The machines are to be equipped with 90 h. p. Curtiss motors.

\* \* \*

J. B. R. Verplanck's flying boat, which was the first Curtiss flying boat and carried away the honors in the Chicago-Detroit cruise, has been rehauled and is ready for another season of flying.

### Great Activity at Hempstead Plains Aviation Field.

Activity at the Hempstead Plains continues on the increase. The Gallaudet and Heinrich military tractors have both been flying, while the new Huntington tractor, which was not expected to be finished before March 20th, made its first test flights on March 11th, which were very successful. Harold Kantner took the machine aloft in three brief flights, the longest of fifteen minutes' duration.

In the first test he simply made a short straight-away. He was so well pleased with the machine's behavior that he immediately essayed a second, this time rising to a height of 500 feet, circling the field several times and then glided down with the power shut off to an easy landing. Darkness compelled the suspension of Kantner's flights for the day.

Albert S. Heinrich also was up in the afternoon with his new tractor biplane, carrying a heavy passenger. Another of the Gyro engines is being installed in Edson F. Gallaudet's tractor military biplane in place of the French Gnome. It will have a trial in a few days.

### Passenger Carrying at the Hempstead Aerodrome

Judging from the number of passengers who were carried for flights at the Hempstead Plains aviation field on March 13th, it looks as if flying is destined to become quite the popular fad this season. On Saturday twenty-five flights were made when Mr. Henry Woodhouse entertained a party from the Aero Club of America. Although there was a twenty-five mile wind blowing, twenty passengers were up.

Harold Kantner, in the new Howard Huntington tractor, made the first flight carrying his mechanic, Trewin, as passenger. As soon as he had landed Albert S. Heinrich went up in his military tractor followed by Kantner. The two pursued each other long enough to cause the onlookers to believe there was a race. Mr. Heinrich then descended and took up Mrs. Heinrich and Mr. Woodhouse. The tractor lifted its load easily and climbing rapidly to a height of over 1000 feet circled the field several times. This was Mr. Woodhouse's forty-third flight, but so enthusiastic was he about the new machines that he immediately went up with Harold Kantner, who put the Huntington machine through its paces, at times climbing several hundred feet and then speeding along a few feet above the ground.

From then on both Mr. Heinrich and Mr. Kantner were kept busy carrying up passengers one after the other. Amongst those taken up by Mr. Kantner were Dr. Austin Roy, J. B. R. Verplanck and Walter H. Phipps. Particularly enthusiastic passengers who flew with Mr. Heinrich were Dr. T. H. Evans and Mr. J. Oakman.

### New York to Have Aero-Commuters Landing Station

Owners of flying boats and hydroaeroplanes who may wish to commute in them the coming summer will have a landing station provided by the Aero Club at Seventy-second street and the East River, New York City.

A committee of the club inspected the site and pronounced it ideal for an air terminal for business men who live up Long Island Sound, on Long Island or in Connecticut, and who may wish to cut down the commuting time of express trains or even fast steam yachts by using flying boats.

The Automobile Club has offered all the facilities of its new garage and clubrooms recently opened in Seventy-second street. There the flying boat owner can pick up a motor car for the final lap of his dash to his office as well as leave his car when he takes to the air returning home in the afternoon.

### Sperry Continues to Demonstrate Flying to New Yorkers.

To prove to Commander Pfister, of the Italian navy, the value of his invention, Lawrence B. Sperry, inventor of the Sperry gyroscopic stabilizer, took him for a flight around Manhattan and Brooklyn recently. Sperry took his hydroaeroplane from the Brooklyn Navy Yard about 11 o'clock and, with Commander Pfister as passenger, sailed a short distance in the water.

In the office of the Sperry Gyroscope Company, on the Manhattan Bridge Plaza, Donald C. Goodman, Sperry's assistant, said that the concern would ship three stabilizers to Italy. Mr. Bates, an installation engineer for the company, will go to see that they are properly installed on aeroplanes.

### Clifford Webster Demonstrates for Uncle Sam Latest Burgess-Dunne Hydro-Aeroplane.

Clifford Webster, of Haverhill, Mass., piloted one of the Burgess-Dunne hydroplanes in exciting trials and tests of machines on land and water at the United States government's aviation station in California recently when several types of combined air and sea crafts were tried out in the company of army and navy experts. W. Starling Burgess witnessed the demonstrations.

### Caleb Bragg Quits Motor Speedway to Become Flier. Racer Is Having Aerial Limousine Constructed.

One of the foremost racers in this country today, Caleb Bragg has turned away from the dangerous speedway and is giving his undivided attention to learning to fly at the Glenn L. Martin school, in Los Angeles, California. He is also having built a biplane equipped with not only the latest necessary parts, but even furnished to the point of luxury as well as comfort.

Mr. Martin, who was in New York recently on business, said that he is proud of his pupil. "I made up my mind after fifteen minutes in an aeroplane with him that he would pick it up quickly," said the constructor. "He is making good, and is going to amount to something. Yes, he will go in for air racing. Anything in the way of a contest appeals to Bragg. He is out at San Francisco now taking part in the automobile races at the Exposition, but he will soon have his new aeroplane."

Bragg's biplane will carry a passenger seated in front of the pilot. It is of the tractor type. The wings spread forty-two feet. The landing gear is detachable, and may be replaced in twenty minutes by a pontoon, converting the craft into a hydro-aeroplane. It has tank capacity for eight hours' fuel. Its completeness of equipment causes the designer to name it a limousine of the air. There is a self-starter for the big motor, which is to be of 130-horsepower, water cooled, a generator for an electric searchlight to facilitate night flying, a windshield, chart board and full set of instruments, speedometer, inclinometer, barograph and compass.

### Coyote Hunting With Aeroplane.

Coyote hunting with an aeroplane is the new sport introduced at Los Angeles by Glenn L. Martin. In a recent trip he took Fred Mills, the crack shot with him. They started from Griffith Park and sped away up the San Fernando Valley, to return with three coyotes and two wildcats.

Both Glenn Martin and Fred Mills are crack shots. Mills is an exceptional fine shot and did all the shooting with Martin at the steering wheel of the tractor.

"We hurried up the valley," said Mr. Martin, "flying within a hundred feet of the ground until we stirred up a flock of quail. Then we rose and circled around them in half-mile swoops. We spotted the coyotes and wild cats. I came down to within a 100 feet of the ground when Mr. Mills shot and killed a coyote. Then we hurried up again so as not to scare the others, coming down when we spotted another."

The hunt came at the suggestion of Bernal Dias. Both Glenn Martin and Bernal Dias are opposed to the present bill before the State Legislature for the closing of the Angeles reserve. Both believe that the coyotes and wildcats kill more game than the hunters and that a bounty on these would mean plenty of game.

"I can prove that if I can find a good shot," said Mr. Martin to Bernal Dias. "The coyotes and wildcats are always in the immediate vicinity of the game. An aeroplane hunt will prove that."

Bernal Dias looked up Fred Mills, furnished him with the guns, and ammunition. Glenn Martin and Fred Mills, with Bernal Dias watching, went on their hunt yesterday.

The coyotes and wildcats were where the quail were. Fred Mills's gun was true. The three coyotes and two wildcats are on display in the windows of the Bernal Dias Sporting Goods Store, today.

\* \* \*

E. K. Jaquith, the Curtiss pilot, has been flying in Florida. Accompanied by Lionel Armstrong, of Pasadena, California, he recently made a trip in an aeroplane from Palm Beach to Miami in an hour and five minutes.

\* \* \*

Frank Champion, who has opened an aviation school at Overland Park, Kansas, has issued a challenge to meet any aviator in a one- or two-hour speed contest at the opening of the Overland field in April.

\* \* \*

J. A. D. McCurdy, the veteran aviator, is the head of the Curtiss Company at Toronto, Canada.

\* \* \*

Henry Kloeckler, the Hammondsport wizard who can be everywhere and attend to everything at the same time, has but one wish these days—for longer days, so as to increase the output!

\* \* \*

Captain Virginius E. Clark, of the U. S. Army Aviation Corps, has written a mighty interesting article on "Aeroplane Defense of Seacoast." It appeared in a recent number of the Coast Artillery Journal and in the New York Times.

\* \* \*

"Tex" Milman, the former Moisant instructor, is now flying the Gallaudet tractors at the Hempstead Plains aviation ground and reports that he is delighted at the ease with which they handle. As soon as the new 90 h.p. Gyro motor is installed in place of the 50 h.p. Gnome in the larger machine Mr. Milman expects to make some long flights.

\* \* \*

Samuel S. Pierce, the American pilot who has had an extensive experience in Europe, is booked to take the Burgess-Dunne to Russia in behalf of Gaston, Williams and Wigmore.

\* \* \*

Glenn H. Curtiss paid a flying visit to Chicago and New York on his way back from the Coast.

\* \* \*

F. H. Russell, of the Burgess Company, has completely recovered from the attack of pneumonia.

\* \* \*

Orville Wright has not entirely recuperated his good health. The long rest ordered by his doctor has not resulted as was expected, so Mr. Wright is still confined to his home.





*Mrs. Heinrich and Mr. Henry Woodhouse snapped at Hempstead before starting a flight with Albert S. Heinrich in the new Heinrich Military Tractor equipped with the 110 h.p. Gyro motor.*

Miss Stinson's Commendable Work

MISS KATHERINE STINSON has been flying at San Antonio, Texas, and devoting considerable of her time to promoting interest in aviation in the schools. Every student of the San Antonio schools has been receiving instruction, some by actual rides in the air.

Beginning with cadets of the Peacock Military College she has been giving exhibitions for each school in San Antonio, devoting one afternoon to each school. She has allowed each school the privilege of selecting one of the student body to go up with her as a passenger.

The Peacock cadets turned out in full force and in uniform, and marched to the aviation field, where an informal reception was held for them. Taking a circular formation around the aeroplane, in which sat Miss Stinson, one of the cadets, selected by his fellow students, presented the girl aviator with a large bouquet of red and white carnations, making an address of presentation.

Miss Marjorie Stinson, a younger sister, who recently obtained an air-pilot's license after completing a course in aviation at the Wright school in Dayton, Ohio, also will make practice flights in the Wright biplane. When the accepted "aviation season" opens with the advent of Spring, both young women will start out on an exhibition tour. Miss Katherine Stinson will be equipped with a new Wright machine of the latest model, and Miss Marjorie Stinson will use the biplane which they now have at the Fort Sam Houston hangar.

As chief assistants and mechanics to the two girl aviators are their two brothers, one older and one younger than either of the young women. Both of the boys are now being instructed in aviation and expect soon to have pilot's licenses themselves.



*Miss Stinson instructing the World's youngest aviatrix.*



*A group of West Texas Military Academy cadets gathered around Miss Stinson in front of her Wright biplane.*



### Lincoln Beachey Killed When Wings of His Experimental Monoplane Collapse

While flying at San Francisco on March 14th, Lincoln Beachey, noted the world over for his daring flights, fell to his death while attempting a spectacular dive in his new monoplane. The fatal fall can only be attributed to the fact that Beachey intrusted his life to a machine which common sense should have shown was insufficiently braced for its work.

In executing his familiar tricks a few minutes before, starting on the perpendicular dip from 3,000 feet, Lincoln Beachey showed he had complete control over the craft. It was as he attempted to straighten out after the dive that the wings of his monoplane collapsed.

The following excerpts from an editorial in the New York Times expresses our views—and our sorrow over his passing:

Though Lincoln Beachey met his frequently prophesied death while engaged in the sort of flying that has no very obvious relation to what may be called the practical side or part of aerial navigation, the performance of such feats as the one that ended in the last of his many accidents does serve a better purpose in addition to the incidental one of giving thrills to crowds of morbid spectators. Each of these feats illustrates the possibilities of the aeroplane and trains the aviator in meeting those accidental disturbances of equilibrium which he is likely at any moment to encounter.

It must be remembered that he was killed not because he had attempted to do something which he had done many times before, but because he made the attempt with a poorly designed monoplane, instead of with the structurally stronger biplane with which he was more familiar.

That was his fatal mistake. He subjected his machine, when he suddenly changed its vertical downward course to one approximately horizontal, to a strain which its widely extended and weakly braced wings could not resist, and when they crumpled under the shock there was no further opportunity for the exercise of his wonderful skill. The strain, however, was one that could have been calculated beforehand, and had Beachey been as good a designer as he was aviator he would have known on just what margin of safety he was flying and he would have refrained from exceeding or even approaching it.

The lesson of his death, therefore, is not the one that will be most often drawn from it—that "fancy" flying should stop—but rather that such flying should be attempted only with machines known to be strong enough to withstand the greater stresses which flying of that kind produces. In Beachey's death American aviation has sustained a heavy loss.

### Art Smith Exceeds the Safe Limit

Art Smith, who has been touring the West, and performs a new and most dangerous stunt—consisting of looping the loop at night—by the light of fireworks adjusted to the edges of his plane. The first of these exhibitions was given recently to a big crowd in New Orleans. Large, slow burning colored lights and Roman candles, numbering seventy-six in all, are fastened to the wings, and ignited before the aeroplane rises.

The blaze of light enables the watchers to see the craft mount in circles to a height of half a mile. There the shooting pieces are touched off by an electric device by the aviator just as he turns his machine down and dives into the loop, sweeping through it as a circle of flame. Smith made four more loops.

Art Smith is an excellent flyer and we can ill afford to lose him—so we hope he will employ his abilities in a less dangerous and more constructive line.

### Harvard Aeronautical Club to Be Revived.

The Harvard Aeronautical Club is to be revived as an active organization. A few years ago it was a very busy society and promoted two big aeronautical meets at Squantum, after which it relapsed into inaction. Under a new administrative board, made up of E. E. Bates, '17, E. H. Beane, '17, and E. P. Warner, '16, some new business will be undertaken, so that all men in the university who wish to take up some phase of aeronautical work will have the opportunity.

### McGee Will Pilot New Water Plane.

Jack McGee, of Pawtucket, Rhode Island, has been selected by B. Stephens & Sons to exclusively fly its hydro-aeroplane, the first machine of the kind ever made by a Rhode Island concern and which has the added distinction of being driven by the first 12-cylinder air-cooled marine engine ever made in America. The finishing touches are now being made at the company's hangar at Field's Point.

### Air Line Between Joplin and Other Towns Proposed.

It is announced that Hugh Robinson will establish a biplane service between Joplin, Mo., and Neosho twenty miles apart.

## CALIFORNIA NEWS

By George B. Harrison.

A pouring rainstorm at the Panama-Pacific Exposition at San Francisco made the Vanderbilt cup race out of the question on February 22nd, and the automobile classic was accordingly postponed until March 6th. Despite a high wind which prevailed with the rain Lincoln Beachey flew as a substitute program for the automobile race, and 80,000 persons held umbrellas and watched him. Beachey looped the loop within a few hundred feet of the water and executed other aerial gymnastics. The novelty of a loop-the-loop flight in a rain storm appeared to satisfy the spectators in place of the race. On the opening day of the Panama-Pacific International Exposition Beachey flew before 200,000 persons.

\* \* \*

When a Jannus flying boat fell into the bay at San Diego February 19th the skipper and crew of the schooner Annie Larsen made haste to secure the aeroplane and hold it for salvage. They were compelled, however, to return the machine to Roger Jannus without right of salvage under the ruling that a hydro-aeroplane which becomes disabled while flying over or in territorial waters of the United States and is picked up by others than the owners cannot be held subject to salvage.

Jannus claimed that the crew of the windjammer in their haste to secure salvage hoisted the aeroplane to the deck of the schooner so roughly that they damaged it badly, breaking struts and aileron wires and straining the boat so that bad leaks developed. The aeroplane experienced a sideslip while flying over the bay, piloted by C. W. Webster.

\* \* \*

An effort to guarantee a suitable prize for a notable flight in California is under way in that State. The plan contemplates a flight by Silas Christofferson from a point in the San Joaquin Valley to the Yosemite and then over the high Sierras, circling Mount Whitney, with a landing at Bishop near the eastern boundary of California. If enough money can be raised to justify throwing the flight open to competition aviators generally will be invited to participate, but if the guarantee proves small the preference will be given to Christofferson, who has already flown over Mount Whitney on a short flight. The trip would call for an altitude of at least 17,000 feet and about 150 miles in distance. If the plan is successful official observation will be requested.

### Activities of Jannus Brothers

Aviator Roger Jannus continues to do a rushing business at San Diego, California. Recently he rose from wet mud, the tide being so far from shore that Roger couldn't wait.

Aviator J. D. Smith, of the Jannus Brothers California contingent, after an interesting and beneficial season at San Diego, has accepted a position with L. E. McLain, of St. Petersburg, Florida, and will assist Mr. McLain in bringing his old machine up to form. It is expected that Mr. Smith will continue to book under the general management of the Jannus Brothers.

\* \* \*

Aviator Tony Jannus is so excited at the prospect of being able to fly his new machine before the end of March that his friends are afraid he will qualify on the 1st of April.

\* \* \*

Aviators Fritz Ericson and Tony Jannus plan a flight from Baltimore, Maryland, to Philadelphia in the new Jannus Brothers Exposition Model. This cruise will be made through the instrumentality of Mr. Jos. A. Steinmetz, who wants Philadelphians to have the same opportunities to enjoy the sport that have so long been afforded other large cities. Passenger business looks better than ever.

### Thomas to Establish Flying Boat Service.

Ralph M. Brown and Charles Fay, Jr., two of the aviators connected with The Thomas Brothers Aeroplane Company, are likely to be in charge of the flying boat service which is to be put into operation on Cayuga Lake this summer by the Thomas Company. It is planned by the Thomas Brothers company that Brown will do considerable flying near Ithaca during the summer months and will at various times aid in the instruction given to students of the School of Aviation.

## Foreign Aeronautical News

Reported by Robert Pluym and Ladislav d'Orcy

### Belgium

THE Germans, warned by spies who still succeed in operating in Flanders, sent five aeroplanes laden with incendiary bombs, over La Panne last Friday while Queen Elizabeth of the Belgians was passing in review a Grenadier regiment and the Tenth Infantry.

As soon as the Taubes came abreast of the city they began to drop their bombs, apparently aiming for the parade grounds. Some of the bombs fell near the Red Cross Hospital, while others dropped close to the royal villa. One bomb carried away the cornice of a villa and killed a nurse and a little boy she carried in her arms. A military tailor also was killed.

While the presence of the aeroplanes, which were so high as to be almost invisible, created excitement, they were not allowed to interfere with the review. Unmindful of the fact that the proceedings were punctuated occasionally by the explosion of a bomb the band struck up a lively march, and the seventy-two companies in the two regiments marched past between the Queen and the sea.

The Queen, unmindful of the danger, sat her horse like a veteran. Her attitude strengthened the nerve of the people massed on the dunes.

### France

The latest addition to the French airship fleet, the Astra-Torres dirigible *Pilatre-de-Roziers* of 24,300 cu. m. and 1,000 h.p. has just made its acceptance tests at Paris. This dirigible is one of the eight ships that were ordered by the French Aeronautic Corps in compliance with the 1912 program.

\* \* \*

In order to prevent an aerial raid of German aircraft over Paris at night the French Aeronautic Corps has organized a regular night patrol of armed aeroplanes to watch the skies of the French capital. Some time ago General Hirschauer commanding the French Fifth arm went aloft himself in a machine so as to ascertain that every precaution had been taken to meet successfully German night raiders. The squadron remained aloft for four hours.

### Germany

A son has been born, on March 13, to Count and Countess Brandenstein-Zepelin.

The Countess is the only child of Count Zeppelin, inventor of the Zeppelin dirigible balloon. At the time of her marriage the King of Württemberg conferred upon her husband, Baron von Brandenstein, the title of Count, with the name of Brandenstein-Zepelin.

Thus the name of Zeppelin is borne by a descendant of the inventor, although he has no son.

\* \* \*

According to the report of an eye-witness, a Zeppelin which appeared on March 3 over the French lines near Bethune on Wednesday was brought down and captured.





The departure of the British Naval aeroplanes and seaplanes on their way to the Belgian coast on February 12 was a most impressive sight as they passed out over the sea. They rose one at a time in quick succession, ascending high into the air to avoid the haze, and the long line stretched out, as an eye-witness picturesquely described it, exactly like a flight of wild ducks.

Several French and English airmen went in pursuit of the airship as soon as it appeared, climbed above it, and dropped bombs which penetrated the envelope.

The hinder part of the balloon was seen to break away from the rest, and the Zeppelin rapidly fell to the ground in a collapsed condition.

\* \* \*

The German Navy has lately lost three naval airships, viz. the L-3, a 27,000 cu. m. Zeppelin and the L-4, a 30,000 cu. m. Schütte-Lanz, both wrecked on Feb. 17 in a gale on the island of Fano, Denmark, and the L-8 a Zeppelin of the naval (27,000 cu. m.) type, destroyed accidentally at Tirlemont, Belgium, on March 5.

The destruction of these three airships reduces the German naval air fleet to three units, viz. the L-5 which is the former *Sachsen* of the German Aerial Transit Co. whose size has been increased to 21,000 cu. m., after the Navy had commandeered her following the wrecking of the L-2 at Johannistal and the L-6 and L-7 of the standard naval type of 27,000 cu. m. and 800 h.p.

The German Army Zeppelins are of a smaller type, their capacity being of 22,000 cu. m. These ships are fitted with three 200 h.p. Maybach motors and are believed to attain a speed of about 45-50 miles. Although it is difficult to state safely their number conservative estimate allows us to believe that from twelve to fifteen Zeppelins have been in commission on March 1.

Three Schütte-Lanz airships completed in January and February should be added to this fleet.

#### Great Britain

The half dozen Curtiss transatlantic type flying boats delivered to the British Admiralty have been giving so satisfactory results that an order for more has been placed with the Curtiss Company. The tractors and motors ordered from the Curtiss plants are being delivered.

\* \* \*

Among those awarded the military cross is Captain Felton Vesey Holt, of the Oxfordshire and Buckinghamshire Light Infantry and Royal Flying Corps:

"For gallantry on January 22nd, 1915, in engaging single-handed a group of twelve German aeroplanes which were attacking the town of Dunkirk. He was subsequently joined by two of our own biplanes, which resulted in one of the German machines being brought down and its pilot and observer being captured."

\* \* \*

In the list of names of those recommended by Field-Marshal Sir John French for gallant and distinguished service in the field, published in the special supplement of the *London Gazette*, are four aviators of the Royal Navy and twenty-seven of the Royal Flying Corps.

\* \* \*

The aviators with the Royal Aero Club certificate, which numbered 820 at the beginning of the war numbered 1096 on February 22nd.

#### Italy

A large order for warplanes has been placed with an American firm. Among the machines already delivered is a transatlantic type Curtiss flying boat.

A new altitude record for a military dirigible balloon was established at Campalto yesterday, when Capt. Biffi reached a height of 10,763 feet 9 inches with the M-1.

The dirigible was in the air five hours and forty-five minutes and descended in excellent condition with sufficient gas and ballast to have continued the flight for some time longer.

\* \* \*

The commander-in-chief of the Italian Army has prohibited aeroplanes and airships from making flights over the provinces of Como, Sondrio and Brescia without special authorization.

#### Russia

The Black Sea air fleet, which is entirely composed of Curtiss machines, has been reinforced by the arrival of shipments of new Curtiss machines and motors.

\* \* \*

Charles C. Witmer, the Curtiss pilot who went to Sebastopol recently, was given a cordial reception by the officers of the Russian air fleet, many of whom were his pupils in 1912-13.

\* \* \*

The following exploit is confirmed:

The Turkish cruiser *Breslau* attempted to shell and capture a launch off the Kherson lighthouse, near Sebastopol.

Suddenly like the flight of falcons the seaplanes rose, while the Russian cruisers put out.

The *Breslau's* speed helped her but very little. The airmen easily overhauled her and dropped bombs from a great altitude on her decks, where they exploded.

She steered at full speed to the open sea, at the same time making desperate efforts to reach the seaplanes by gun fire. The airmen, however, seemed invulnerable, and after pursuing the *Breslau* for several miles returned in safety to Sebastopol.

#### Turkey

The bombardment of the Dardanelles has been greatly assisted by the co-operation of seaplanes which were sent thither on the British Navy's new hangar ship, the *Ark Royal*.

Numerous reconnaissances were carried out over the Turkish fortifications in order to locate concealed batteries. This work proved to be rather dangerous as the seaplanes had to fly very low so as to get the exact location of the enemy's guns and the Ottomans trained a murderous fire upon the British airmen.

One seaplane, whose pilot was Lieut. Garnett and whose observer was Lieutenant-Commander Williamson, became unstable on March 4 and dived nose on into the sea. Both officers were injured.

Lieut. Douglas, reconnoitring at close quarters in another seaplane, was wounded, but managed to return safely. Seaplane No. 172, commanded by Flight Lieut. Bromat, with Lieut. Brown as observer, was hit twenty-eight times. Seaplane No. 7, Flight Lieut. Kershaw and Petty Officer Merchant being the crew, was hit eight times in locating concealed positions.

The *Ark Royal* convoy to the aeroplanes and seaplanes, is equipped with every appliance for necessary repairs and for maintenance of the numerous aircraft she carries.





Aeronitis is a pleasant, and decidedly infectious ailment which makes its victims "flighty" mentally and physically. At times it has a pathologic, at times merely psychologic foundation. It already has affected thousands, it will get the rest of the world in time. The symptoms are different in each case and each victim has a different story to tell. When you get through with this column, you may be infected and may have a *different* story to tell. If so, your contribution will be welcomed by your fellow *aeronuts*.

The Aero Clubs of America and Illinois may sympathize with each other. Their supposed representatives, Congressmen J. J. Fitzgerald, of New York, and James R. Mann, of Illinois, vied with each other in opposing the aeronautical appropriation and saying foolish things about a subject of which they seemed to know very little. Messrs. Fitzgerald and Mann may be called representatives who do *not* represent. They certainly have not represented their constituents in dealing with aeronautics—and the whole question of armament—in the past four years.

If the navy gets \$1,000,000 where the army can only get \$300,000 for aeronautics should we not say "The Navy and Army?"

Turkey lost more aeroplanes in one day than the United States has had in two years!

It was to be expected that the Club dances given by Automobile Club of America, Motor Boat Club of America and Aero Club of America would be well attended by lighter-than-air men, but they have by no means a monopoly. The heavier-than-air contingent attends in force.

Frank Coffyn is again flying—wherever the music is good and the floor smooth and he can show his capabilities as a thorough all-around high-flyer.

The following items from the Congressional Index gave us a fright. The word *memorial* seemed to express appreciation after death—and we feared that some Congressmen who value things from the amount of politics they contain had killed this excellent measure.

Advisory Committee for Aeronautics, appoint (see S. J. Res. 229, 230; H. J. Res. 413).

Letter from Board of Regents of Smithsonian Institution transmitting *memorial on the need of* (S. Doc. 797; H. Doc. 1549), 3029, 3122.

Joint resolution providing for appointment of an advisory committee for (see S. J. Res. 229, 230; H. J. Res. 413).

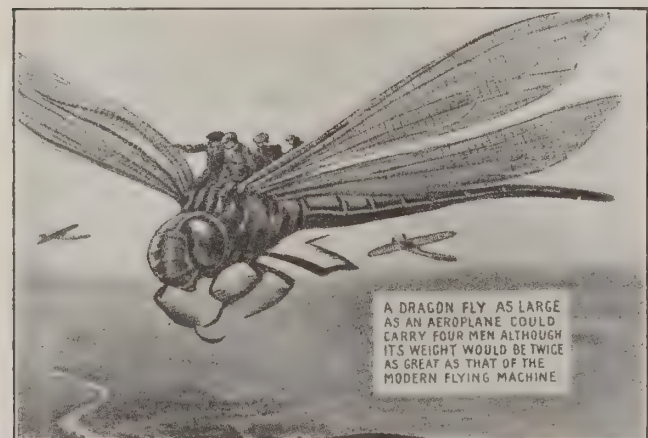
Letter from Board of Regents of Smithsonian Institution transmitting *memorial on the need of* a national advisory committee for (S. Doc. 797; H. Doc. 1549), 3029, 3122.

In spite of the fact that W. Leonard Bonney has been reported dead by the New York Times he goes about fit and ready to start for a busy season. And it isn't his ghost either!

Another of our members contemplates looping the loop this Spring. He is Earl Dougherty. Max Stupor is building the machine. If a few more members build loop-the-loop machines the club will be in a position to hold a loop-the-loop contest.—Aero Club of Illinois News in *Flying*.

A ranchman in Montana who has a small place of 75,000 acres is coming East to look around for an airship. It used to take him a week to inspect his estates from the back of a horse. Then he got an automobile and made better time. Now he wants an aeroplane and thinks he can make the inspection in half a day. Perhaps he can, but the chances are that the machine will keep him so busy that he will have little time to give to his six big flocks of sheep.—Lowell (Mass.) *Courier Citizen*.

E. Percy Noel, the Chicago lit. has jumped the Red Cross, but still keeps his automobile. Percy knows every aviator in France, but he claims you have to have a pass to ride in his car. What's the use of rich friends, anyway?—Paris Edition of the *Gotham Gazette*.



#### Advice to Aeroplane Inventor

[How to develop an efficient flyer: Burbankize a dragon fly

#### Aerial Eloper Divorced

John H. Roper, an aviator, has obtained at Midland, Texas, a decree of divorce. He accused his wife, Effie Radcliffe Roper, of Canopus, near Carmel, of eloping in an aeroplane.

Roper alleged that when he last saw his wife she was getting into an aeroplane on September 24, 1913, with James T. Wilkes, a mechanic, at West Pawling. They left the machine at Milltown, and then he lost track of them.—New York Tribune.

The N. Y. Times war correspondent with the German Army in Poland met during his stay out there a German aviator officer whose brother is a school teacher in Kents Hill, Me. The aviator wants his brother to know that "when last seen he was well and winning medals."

Watch out or Aeronitis will get you!

Representative James R. Mann, of Illinois, always points with pride to the fact that he was responsible for the amendment which resulted in the acquisition of the first Wright flyer by the United States army. Unfortunately he always uses that reminder in opposing measures intended to advance aeronautics.

Because he was instrumental in giving a piece of candy to a baby he thinks himself justified in starving a growing boy.

Those Congressmen who opposed the army and navy appropriations ought to be placed in the first line of defense.

Flying-Boating sure gets into the blood,—but you've got to have the blood.

Must every government aeroplane take a victim—or two—with it to the junk pile?

"Flying is an uplifting vocation"—the lecturer paused for the laugh.

"Apply it to Congressman Fitzgerald, then," roared a raucous voiced heckler.

We can sympathize with migratory birds hurrying North as soon as weather conditions permit.

Scene—Aero Club Smoke Room.

Aviator A: "Would you call the undertaker who showed me through his embalming establishment just before a flight a humorist?"

Aviator B: "What about the band, evidently at the end of their repertoire, playing the Dead March while I made a flight at —?"

Office Boy: (clearing a line of retreat) "Grave incidents!"

#### A NEW SPECIES (Pikerson Aeronorium)

A new specimen of the genus homo has been unearthed in Savannah, Ga. A local (reputed) millionaire made arrangements with a well-known aviator to take a flight in the latter's flying boat from Savannah, Ga., to St. Catherines, Ga. The price and time were agreed on. The proposed event was given local publicity.

At the time agreed on, the aviator with his mechanic were waiting, the boat "tuned up" for the occasion. They waited all day. The aspirant for aerial honors did not appear. The aviator has since failed to get any response or consideration from him. But this (reputed) millionaire has personally with appropriate descriptions reported to his friends that he made the trip.

While "playing" a small town in a section of Georgia where homicide causes little local disturbance, an aviator had occasion to employ a local garage man to overhaul his motor. The anticipated time was two nights and a day. During the night a murder was committed a few doors from the garage. The work on the motor was neglected because the garage car was requisitioned to fetch in sheriffs, witnesses, jurymen, etc. The aviator on ascertaining the facts, was alarmed at the delay and asked the proprietor:

"Say, there is no fear of you being called on the jury, is there?"

"Oh, no," replied the latter, "I was on last week."

An aviator, whose claim to the appellation was based on his ability to fly his machine round a big field on a calm evening, had been taken by a get-rich-quick promoter to fill an engagement in a Southern town. The flying field was the usual ball park with the back fence dropped. The flyer got out in fine shape as the weather was good, but on returning he couldn't hit the hole in the fence and came over it. His wheels touched first at the diamond and ran smash into the corner. The ends of the wings meeting the converging fences at the corner arrested in their breakage the momentum of the machine before the seat was impured against the fence. The aviator, dazed, was being assisted by an elderly native in the operation of extracting splinters from himself, when the latter made in puzzled tones the following inquiry: "Say, pardner, how do ye stop that durned thing when you fly in a field that aint got no fence?"



# MODEL NEWS

BY WALTER H. PHIPPS

## CLUBS

**THE AERO SCIENCE CLUB OF AMERICA**  
29 West 39th Street, New York City

**PHILADELPHIA MODEL AERO CLUB**  
2208 Brown Street, Philadelphia, Pa.

**PACIFIC NORTHWEST MODEL AERO CLUB**  
915 Ravenna Boulevard, Seattle, Wash.

**LONG ISLAND MODEL AERO CLUB**  
401 Grant Ave., Cypress Hills, L. I.

**BAY RIDGE MODEL CLUB**  
6730 Ridge Boulevard, Bay Ridge, Brooklyn

**SUMMIT MODEL AERO CLUB**  
26 Shady Side Ave., Summit, N. J.

**THE ILLINOIS MODEL AERO CLUB**  
Room 130, Auditorium Hotel, Chicago, Ill.

**MILWAUKEE MODEL AERO CLUB**  
402 Bradford Ave., Milwaukee, Wisc.

**CONCORD MODEL CLUB**  
c/o Edward P. Warner, Concord, Mass.

**AERO CLUB OF ST. LOUIS**  
Columbia Bldg., 8th & Locust Sts., St. Louis, Mo.

It is the intention of the publishers of *Aerial Age* to promote interest in and encourage scientific model building and flying.

To this end there will be devoted a full page each week to Model News. It is hoped to make this department as instructive and interesting as possible and so wide in scope as to cover the activities of model flyers in all parts of the country.

*Aerial Age* will publish the weekly bulletins of the model clubs and invites all model clubs and flyers to send in reports of their activities.

In addition to publishing all the important events in model aviation, *Aerial Age* will run instructive articles on model building and flying, describing and illustrating in detail the construction of the most successful types of models.

All model flyers are urged to co-operate by sending in photographs, drawings or descriptions of new and original machines or devices, which they think would prove of interest to others. Address all matters pertaining to models to the Model Editor, care *Aerial Age*, 116 West 32nd St., New York City.

### The Aero Science Club of America

Within the past few weeks a number of notable flights were made by the New York flyers and also by the members of the Long Island Model Club, which is now a branch of the Aero Science Club. At Liberty Heights, L. I., trials were recently made for tractor records. These resulted in two new tractor duration records being established, Mr. L. Ness, of the Long Island Club, making 27 seconds with a tractor Monoplane and a new record being set for biplane tractors by Mr. C. V. Obst's model, which remained in the air for 21 seconds.

Although these marks are official they have often been exceeded at other times and will not stand for long as the interest in tractor flying has grown considerably during the last few weeks and a number of new contests are planned for this type.

Scientific models are now becoming more popular than ever, new competitions are being planned for both indoor and outdoor flying, in which meets all models will have to be built to pre-determined specifications, just as man-carrying machines are constructed for army and navy trials. Three of the many big prizes donated for this year will most likely be for scientific model contests.

An indoor control competition is now being arranged by the Contest Committee of the club for the prize offered by Mr. Adams. In this meet the machines will be compelled to fly under the control of rudders or other original steering devices only, in circular, straight and accuracy flights. Models are being built and tested for this coming event by a large number of the model enthusiasts.

Along with the development in scientific models comes that of Model Engines, for some time many of the model flyers have been trying to build model steam, compressed air or other kind of motors to their original design. Although the lack of proper machinery has been a serious drawback to most of these young experimenters a few have succeeded in completing their engines, which have given a very creditable account of themselves. Mention must be made of the excellence of the workmanship and running qualities of those model steam and compressed air machines turned out by Messrs. Schoeber and Funk, of the A. S. C. These machines are exceptionally light and strong, on both the rotary and the horizontal opposed types. They are capable of turning large size propellers at very high speed and certainly ought to be able to propel the models now in the course of construction for them.

America will soon have her first Motored Model Competition.

**Notice:** The annual election of officers of the Aero Science Club will take place on the evening of Saturday, April 3rd at the Headquarters, 29 W. 39th St., New York City. All of those who are members of this organization are requested to be present.

### Illinois Model Aero Club

The Illinois Model Aero Club held a banquet on the ninth floor of the Auditorium Tuesday evening, March 2nd. This is a junior aero club, subsidiary to its parent organization, the Aero Club of Illinois. The dinner was held under the auspices of the Aero Club of Illinois. This club consists of about 100 high school boys, who became interested in aviation through the generosity and effort of Charles Dickinson. These boys, when first organized, were entirely ignorant of the first principles of aviation.

That they are now adepts and after the laurels of the parent club is evidenced by their wonderful progress. The boys hold four world records for flights with model aeroplanes.

The boys make their own models and the writer is compelled to admit that the workmanship and ingenuity displayed is marvelous. One of the boys, Emil Laird, a lad of 17 years, has constructed completely a full sized machine, equipped with 28 h. p. motor, which he has learned to fly. This machine will be assembled and placed on exhibition at the dinner. A feature of the dinner was a display of models of every kind and character, all built by the boys. The proficiency of these boys on aeronautical subjects is amazing and is all the more to be wondered at when you stop to consider the average age of the boys is about 16 years.

This organization would have never been possible were it not for the kindness, co-operation and friendly assistance of Charles Dickinson, who made it possible. All praise to Charles Dickinson, may he never grow old, is the sincere, earnest wish of the boys.



*The magnificent silver trophy presented by Mr. Henry S. Villard for competition between the Model Aero Clubs of America and exhibited in the Trophy Room of the Aero Club of America.*



# GYRO MOTORS

(Rotary)

The Celebrated "DUPLEX" 90 H. P., 7 Cylinder Motor is *Standard* for Exhibition, Loop-the-Loop and all Practical Flying. Also 5 Cylinder 60 H. P. "DUPLEX" and 9 Cylinder 110 H. P. "DUPLEX"

*Send for catalogue*

## THE GYRO MOTOR COMPANY

New York Office  
331 Madison Ave.

774 Girard Street, Washington, D. C.

## AERONAUTICAL TRADE NEWS

THE Russian warplane, constructed by The Burgess Company of Marblehead, for Gaston Williams & Wigmore is finished and the trials will take place in a few days. This machine is thoroughly armored and equipped with special instruments, the Steinmetz bomb dropping device, and radio set and a Turner aviaphone. It is equipped with a 110 h.p. Gyro motor.

\* \* \*

The Curtiss Company, of Buffalo, New York, is pressed with orders and is working over-time.

This is also true of the Curtiss Motor Company of Hammondsport, New York.

As *Aerial Age* goes to press a report is received advising that another factory, with school for water and land flying may be established in or near New York in the near future.

A large number of 160 h.p. Curtiss motors have been turned out—all to fill orders for European Governments.

The model K flying boat and model R tractor are equipped with the 160 h.p. motors.

\* \* \*

During his visit to New York, Mr. Glenn L. Martin reported that the Glenn L. Martin Company has been doing a rushing business and is looking forward to a very prosperous season.

\* \* \*

Mr. George W. Turney, of the Rome-Turney Radiator Co., Rome, N. Y., has offered to the Aero Club of America, of which he is a member, to arrange to establish landing places for water and land aeroplanes at Rome, New York. Mr. Turney reports a rushing business in radiators for aeroplanes and says that while the aeronautical business is very modest compared with the regular automobile business his plant welcomes every order for aeroplane radiators with as much enthusiasm as it welcomes large orders from the automobile trade, and they vie with each other in attention to turn out perfect radiators and insure speedy delivery.

### Canadian Curtiss Company Starts.

Ottawa, Ont.—The Curtiss Aeroplanes and Motors, Limited, with a capital of \$50,000, has been incorporated by letters patent, with head offices in Toronto. They are authorized to manufacture all kinds of aeroplanes, hydro-aeroplanes, sea-planes, flying boats, airships, dirigible and other balloons and devices for aerial navigation, besides motor vehicles, engines, and so forth, says the Citizen. The company is empowered also to establish schools for instruction of pilots and mechanics for aerial navigation, and to issue certificates of qualification. This company has already established a branch at Fort Erie, of which N. S. Hopkins, of Hammondsport, N. Y., has been placed in charge.

\* \* \*

Howard Huntington, secretary of the Aero Club of America, has announced the incorporation of the Huntington Aircraft Company, with offices at No. 18 East Forty-first street. The capital of the new concern, it is announced, is fully paid in and the stock is owned by Mr. Huntington and two others. The company has taken three hangars at the Hempstead Plain aviation field, near Garden City, and is building aeroplanes, with Harold Kantner, well known as an aviator, as superintendent. Mr. Huntington has been experimenting in aviation at intervals since 1908, while in the automobile business, and has developed and patented a wing curve. His purposes are to build standard army and navy biplanes, seeking government contracts, also a new type of safe, comfortable and efficient pleasure craft, and a series of Huntington type multiplanes to test separately different designs of this type invented in 1908.

\* \* \*

The Moisant International Aviators have filed a voluntary petition in bankruptcy in the United States District Court, Brooklyn, N. Y. The petition gives liabilities of \$17,761.31, nearly all unsecured. Among the assets of \$7,500 is a claim of \$2,000 against the late Francisco Madero, President of Mexico.

The factory at Winfield, N. Y., and the school of aviation at Hempstead Plains aviation field are still running, and the company hopes to overcome its present financial difficulties.

\* \* \*

Parisano Aerial Navigation Company of America, Inc., Manhattan.—Mfg. aeronautic machinery and appliances, etc.; cap., \$100,000. Incorporators: R. Ebie, Brooklyn; Wm. Swain, John J. Byrne, New York.

\* \* \*

The Fanning Aircraft Destroying Gun Co.—Manufacture of devices for the destruction of aircraft and marine craft; cap., \$1,000,000. Incorporator, C. E. Fanning, Davenport, Iowa.

\* \* \*

Aviauto Manufacturing Company, Inc., New York.—Aeroplane and automobile radiators, also aeronautical supplies; \$5,000. Bernard A. Law, Martin Baier, Sidney F. Miller and one other; James E. Fingan, No. 154 Nassau street.



**Wanted**—Immediately. Three expert Draftsmen, having experience in the design of aeroplanes or in the detailing of aeroplane parts.

Address, Aerial Age, Box 6  
116 West 32nd Street, New York City

### Manager Wanted

for aviator planning long distance flight. Must be experienced in securing exhibition dates.

Address, Aerial Age, Box 7  
116 West 32nd Street, New York City

### For Sale

Curtiss Flying Boat.  
1913 Type. Excellent condition.

Address, Aerial Age, Box 8  
116 West 32nd Street, New York City

### WANTED

**Experienced Aeroplane Exhibition Manager as Half Partner.** J. W. Kirk write. E. A. Richards, 1303 Penn St., Kansas City, Mo.

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**220 H. P. ANZANI MOTOR**

Address Box No. 9, "Flying," 120  
West 32d Street, New York City.

**Aviation Club** now being formed for young engineers desirous of learning to fly. Special terms obtainable by joining the Club now. Write giving full particulars, Age, Engineering education, etc. Address Box 5, Aerial Age, 116 W. 32d St., New York City.

### MODEL AEROPLANES DESIGNS and SUPPLIES

**Real Scientific Models.** Guaranteed to fly better than any other models ever put on the market before—AH RECORD holding types, designed and tested by model experts.

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Plan and instructions with full-sized hull lay-out, 50c. post paid. Plan and instructions alone, 35c.

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ANTONY JANNUS

ROGER JANNUS

### JANNUS BROTHERS

New 120 H.P. Flying Boat now being tested at Baltimore. We are featuring a full working force of competent aviators.

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New Factory: Battery Avenue and Hamburg Street, Baltimore, Md.

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Used by the Russian Government

Makes conversation possible between pilot and passenger.

Invaluable for military use because the officer can direct the pilot in scouting.

Indispensable when maps or photographs are to be made because both hands are left free.

Mouthpiece in position only during conversation.

### Light and Convenient

Outfit consists of 2 Head Caps, 2 Receivers for each user, light-weight Battery and cords. Weight complete, 5 lbs. 5 ozs. Receivers Adjustable to any type of headgear.

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**GENERAL ACOUSTIC CO.,** 220 WEST 42d ST. NEW YORK

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ENGINEERING DEPARTMENT

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## Tools and Equipments for Aeroplane Factories

*We are prepared to give expert advice on:—*

The Planning and Equipping of Factories

The Selection of Woodworking and Machine Tools best suited to particular circumstances

The most efficient methods of Manufacture

The Erection of Factories and installation of Machinery

**Correspondence Solicited**

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Are used on the highest grade military aeroplanes and flying boats made in America.

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Radiators for Trucks and Tractors

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Aeroplanes de Luxe for Boating, Racing, Cross Country Flying



*A Gallaudet 100 H. P. Military Tractor flying with pilot's hands off the controls, proving remarkable inherent stability*

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110 H. P. GYRO MOTOR



*Climb, First Trial, 1000 Feet Per Minute with Passenger*

TRACTOR BIPLANES, MONOPLANES,  
FLYING BOATS

*Military Machines a Specialty*

Learn to Fly at the Heinrich School of Practical Aviation  
Tuition Fee, \$300

## Heinrich Aeroplane Company

CHARLES BLDG.

331 Madison Ave. New York, N. Y.

## Universal Ilanasilk Life Preservers

MAKE AVIATION SAFER

*"Always Ready"*

Automatically hold the head out of water when exhausted or unconscious. Lessens the shock of a fall or bad landing. Protect against moisture and spray.

*Used by*

**Government Aviators**

The "Universal Life Line" Life Saving Mattresses and Pillows for bunks. Motor-boat Life Preservers and Ring Buoys. Swimming Float for Swimmers and those learning to swim.

**Boat and Canoe Cushions**

of any size or type. Made to comply with U. S. Motor-boat laws. All filled with the wonderfully buoyant "Ilanasilk."



**THEY CREATED A SENSATION AT THE MOTOR BOAT SHOW**

The Special Gold Medal and Exposition Gold Medal were awarded these equipments at International Exposition of American Museum of Safety, Grand Central Palace, New York, Dec. 12th to 19th, 1914.

*Write for Catalog*

## Robinson-Rodgers Co.

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Universal Life Saving Equipment Dept., NEWARK, N. J.

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# Martin Tractors Break Records

Remarkable Sunrise-to-Sunset Flight by Lieutenant Byron Q. Jones,  
of U. S. Signal Corps, at San Diego, January 15th, 1915

This flight of eight hours and fifty-three minutes, consuming but three gallons and one pint of gasoline per hour, proves conclusively the extreme economy of consumed power in this latest type machine.



Awarded "Medal of Merit" for establishing the American Passenger Duration Record of 5½ hours, carrying Official Military Load, October 20th, 1914, at San Diego, Cal.

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ASK ABOUT OUR  
"FLYING SCHOOL"

CONTRACTORS TO THE UNITED STATES AND OTHER GOVERNMENTS

A scientifically built machine of staunch construction and highest efficiency.  
Speed range 40 to 90 miles: gliding angle with dead motor, 10 to 1

FACTORY AND OFFICE

**GLENN L. MARTIN COMPANY** 943-5 So. Los Angeles St.  
LOS ANGELES, CAL.

## Announcement

A COMPANY, with stock all paid in, and expansion provided for as fast as the growth of the industry shall warrant:

A PERSONNEL, of high character and talent; a picked man, chosen on the basis of experience, skill, enthusiasm and character, in each of the following branches—factory superintendence and pilot, designing and estimating, bookkeeping and purchasing, patents, metal working, wood working, wing covering and varnishing, assembling and motor adjusting:

A FACTORY, of concrete fireproof construction at the Aviation Field, Garden City, N. Y., possessing great advantage by reason of the situation—directly at the largest aviation proving ground near New York City:

A TOOL EQUIPMENT, of the very latest and finest metal-working and wood-working machinery that can be bought in this country, each machine equipped with individual electric motor, doing away with the usual cumbersome shafting and belting, such equipment, with the above mentioned personnel, insuring accurate workmanship and the interchangeability of parts:

VOUCHSAFE THE CLAIM, that we are exceptionally prepared to accept and fulfill orders for all types of aircraft. We have not sought business first, around which to build our equipment. We have prepared first, and are now ready for any business which comes. We have designs completed and materials selected for the construction of machines, for the Army and Navy, for Mail Carrying, for Long Distance flying, and, for the American Sportsman, we have designed a luxurious pleasure craft, combining a high degree of safety, a high degree of comfort, and a very fair degree of efficiency.



When this company was formed on January 7th, this machine was scheduled to be ready for flight by March 20th, and this date was anticipated by more than a week—an unusual circumstance in aeronautics. The well known pilot, Harold Kantner, who is also the factory superintendent of this company, gave this machine its first trial on March 11th, immediately upon completion, in a wind velocity of 25 miles per hour. So successful was its performance that on March 13th a number of passengers were carried in fine flights in rapid succession. This was also a windy day. No changes were required, and the balance proved correct without alteration.

**HUNTINGTON AIRCRAFT  
COMPANY, Inc.**

18 East Forty-first St., New York City





GLENN L. MARTIN



CURTISS MILITARY TRACTOR



BURGESS-DUNNE



CHRISTOFFERSON

## CURTISS MOTORS

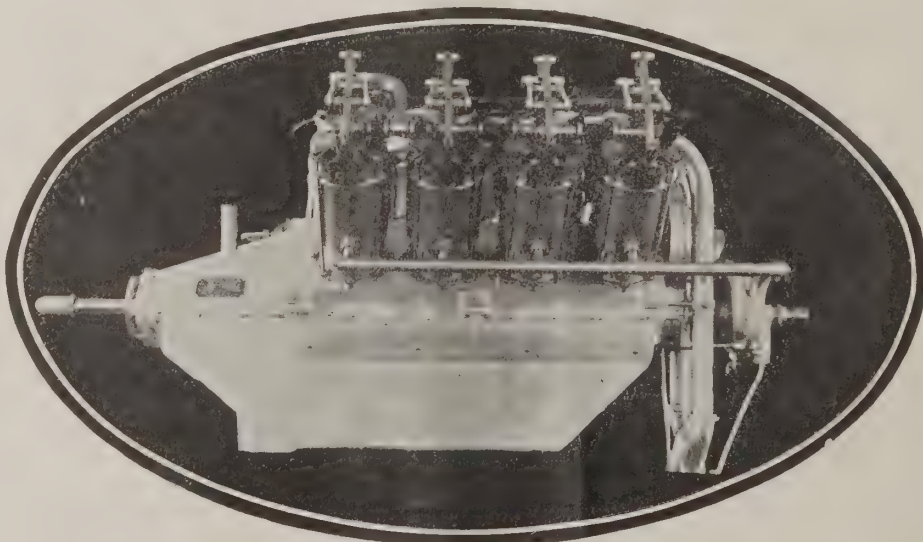
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THOMAS BROS.

INSTALLED in the best known machines made in America, including those of The Curtiss Aeroplane Co., Glenn L. Martin Co., Christofferson Aviation Co., The Burgess Co., Thomas Brothers, etc.

Made in Vertical and Vee types, sizes ranging from 60 H.P. to 160 H.P. *Detailed information on request.*



"O-X" Model

# THE CURTISS MOTOR CO.

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HAMMONDSPORT, N. Y.



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AEA *Stuck*

OF THE  
UNIVERSITY OF ILLINOIS  
30 APR 1915

# AERIAL AGE

## WEEKLY

Vol. I. No. 2.

MARCH 29, 1915

10 CENTS A COPY



*Coyote Hunting By Aeroplane. Fred Mills and Glenn Martin Starting to Hunt Coyotes in a Martin Tractor Biplane*



# Curtiss Flying Boat

*February Class—Curtiss Aviation School  
San Diego, California*



THE Flying Boat in this picture has been in the air 500 hours, traveling 30,000 miles. In this boat hundreds of passengers have been carried and dozens of persons have learned to fly. There have been no accidents nor repairs. This machine is equipped with the newly developed and very efficient single-acting aileron system for lateral balance.

The Curtiss Flying Boat has made flying a safe sport.

**Military Aeroplanes of both Tractor  
and Pusher types for land and water**

*Information on request*

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BUFFALO, NEW YORK



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Are used on the highest grade military aeroplanes and flying boats made in America.

We use only the best materials obtainable and our workmanship is unsurpassed.

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*Established 1853*

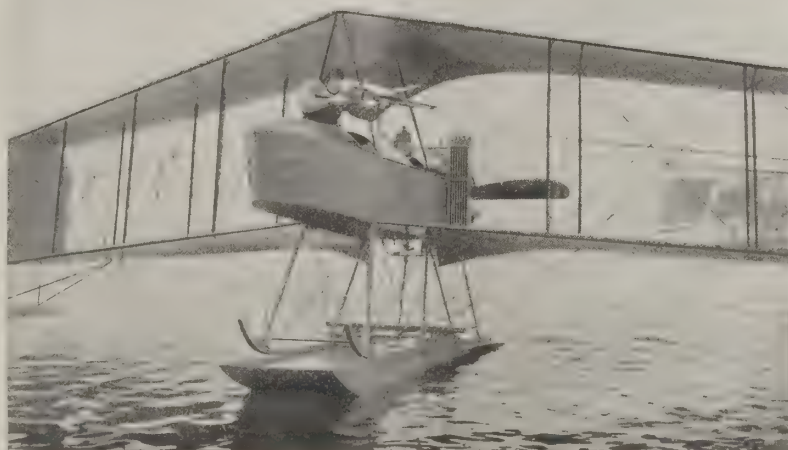
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## Burgess-Dunne Military Aeroplane and SEAPLANES

Furnished to  
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Russia

Self-Balancing  
Self-Steering and  
Non-Capsizable

Form of wing gives  
an unprecedented arc  
of fire and range of  
observation.



Par excellence  
the weight &  
gun-carrying  
Aeroplane of  
the world.

Tail-less and  
Folding Enclosed  
Nacelle with  
Armored Cockpit

SPEED RANGE,  
40-80 miles per hour.  
CLIMB, 400 feet per  
minute.

*Burgess-Dunne convertible land and marine type as furnished the U. S. Army*

## THE BURGESS COMPANY

*Sole American Licensees under the Dunne Patents.*

MARBLEHEAD, MASS.



# Wright Aeroplanes

FOR SPORT, EXHIBITION OR MILITARY USE,  
OVER LAND OR WATER now embody the improve-  
ments that have been suggested by the experiments,  
conducted during the past ten years



*The New Wright Model "HS"*  
*MILITARY FLYER*

---

## THE WRIGHT COMPANY

(The Wright Patents)

Dayton, Ohio

N. Y. Office, 11 Pine St.





*Pensacola Air Station where Dirigibles and Aeroplanes will be delivered for tests*

## U. S. Navy Invites Bids for Dirigibles

**B**IDS for dirigibles for the United States Navy are asked for by the Navy Department. The blanks issued to bidders for the construction of two proposed dirigible balloons for the United States Navy provide that the bids are to be opened at 10 A. M. on April the 20th, 1915, and may be for one machine and power plant or for two machines and power plants. The bidder is to name the time of delivery and other conditions being nearly equal, the time of delivery will be considered in making award.

All drawings, blue prints and descriptive matter illustrating the apparatus are to be placed in a separate envelope and forwarded in time to be received before the hour for opening the bids. All such envelopes delivered late will not be opened and the bids will not be considered. After award of contract the drawings, etc., submitted by the unsuccessful bidders will be returned.

Dirigibles having characteristics differing from those specified will be considered, provided the differences are clearly noted in the specifications proposed and the design proposed has sufficient merit to warrant such consideration.

The decision as to merit of design will be based on the extent to which proposed designs conform to or exceed the requirements, and in this respect the following points are considered of importance in the order given:

Completeness with which the detail information called for in the specifications and plans is furnished, the staunchness of the design, useful load, speed, altitude attainable, rate of ascent, rate of descent, and directional stability. The merits of the power plant will be considered from the view of suitability for the purpose required, propeller efficiency, fuel consumption, weight, and compactness in the order given.

The dirigible is to be non-rigid, and is not to exceed 175 feet in length by 50 feet high and 35 feet wide with the useful load of 2,000 pounds or more. With a full load it must be capable of an ascent of at least 3,000 feet, without disposing of ballast, and descending at a rate of at least 6 feet per second from an altitude of 3,000 feet without danger of buckling.

To have a speed of 25 miles per hour or more.

To be capable of a duration of 2 hours or more at full speed.

To have a car with capacity for a crew of 8 within an enclosed body, the car to be of such form and of sufficient buoyancy to allow of resting on the water, or of moving through same at slow speeds.

To be provided with at least two ballonets, with means of "trimming" by use of same, to act in conjunction with the pitching controls.

To be fitted with at least one ripping panel at the bow and one at the stern.

To be provided with substantial and secure means for mooring by the nose to a mooring mast in a wind 50 per cent. greater than the speed.

Gas leakage not to exceed 1 per cent. in 24 hours when stowed in shed under normal conditions.

All control leads are to be double—one cable, one wire.

The dirigible is to be set up in the Naval Aeronautical Station, Pensacola, Florida, and inflated with hydrogen gas after which the following trials will be conducted:

1. Full-speed trials, with the equivalent of full load in place; five runs over a measured course.
2. Climb.—Starting from the surface of the water.
3. Descent.—To at once descend to the surface at or exceeding the rate specified.
4. Endurance.—To fly in a closed circuit for at least 2 hours at full speed.
5. Maneuvering.—To maintain a reasonably true course across a 15-mile puffy wind. On the speed runs the horizontal control shall be free from excessive undulation.

In a 15-mile wind the dirigible shall be brought to and moored at the mooring mast.

Proposals shall explicitly state the performance guaranteed in the above respects and also the number of men required to handle the machine when housing in shed or mooring to mast.

6. Test for leakage to be the final test.

Improvements developing between the dates of contract and the completion of the machine shall be incorporated in the machine if approved by the Navy Department, which shall determine finally the change of cost and time under the contract, if any is involved. In the same manner any other changes or alterations ordered by the Navy Department after the signing of the contract shall be considered and the change in cost and time determined.

For each day's delay for each machine beyond the date of delivery agreed on in the contract for the acceptance trials the total price under the contract shall be reduced at the rate of one-twentieth of 1 per cent. per day. The contractor shall undertake the instruction of one pilot and a crew and until such pilot and crew are competent to handle the dirigible, \$2,000 of the contract price will be withheld.

Lack of space precludes our printing the specifications in full, so we leave that to our excellent monthly contemporary, *Flying*, who, having more space available, will print the proposal forms as issued in its April number.





*The Curtiss Model "N" military tractor which has found great favor both here and abroad. A Squadron of eight of these craft have just been ordered by the U. S. Army.*

## The Curtiss Model "N" Military Tractor

By Walter H. Phipps



*Raymond V. Morris flying the Model "N" in successful tests at San Diego.*

**I**N view of the great work being accomplished by the new Curtiss model "N" military tractors abroad and the fact that the Curtiss Aeroplane Company has just received an order for a squadron of eight of the latest model "N" types for the U. S. Army, particular interest attaches to this type of machine.

The splendid achievements of the new Curtiss land and water-planes in the European war has demonstrated conclusively the worth of American machines as compared with the best European types. The accompanying photographs and description of the new model "N" will show why this is the case:

Model "N" tractor is arranged for pilot and observer, seated in tandem, and is equipped with double controls so that either man may take charge. With Curtiss model O-X 90-100 h. p. motor it has an extreme flying range of from less than forty to more than eighty miles per hour. Carrying two men and four hours' fuel its speed range is from 45 to 75 miles per hour.

### *Wings*

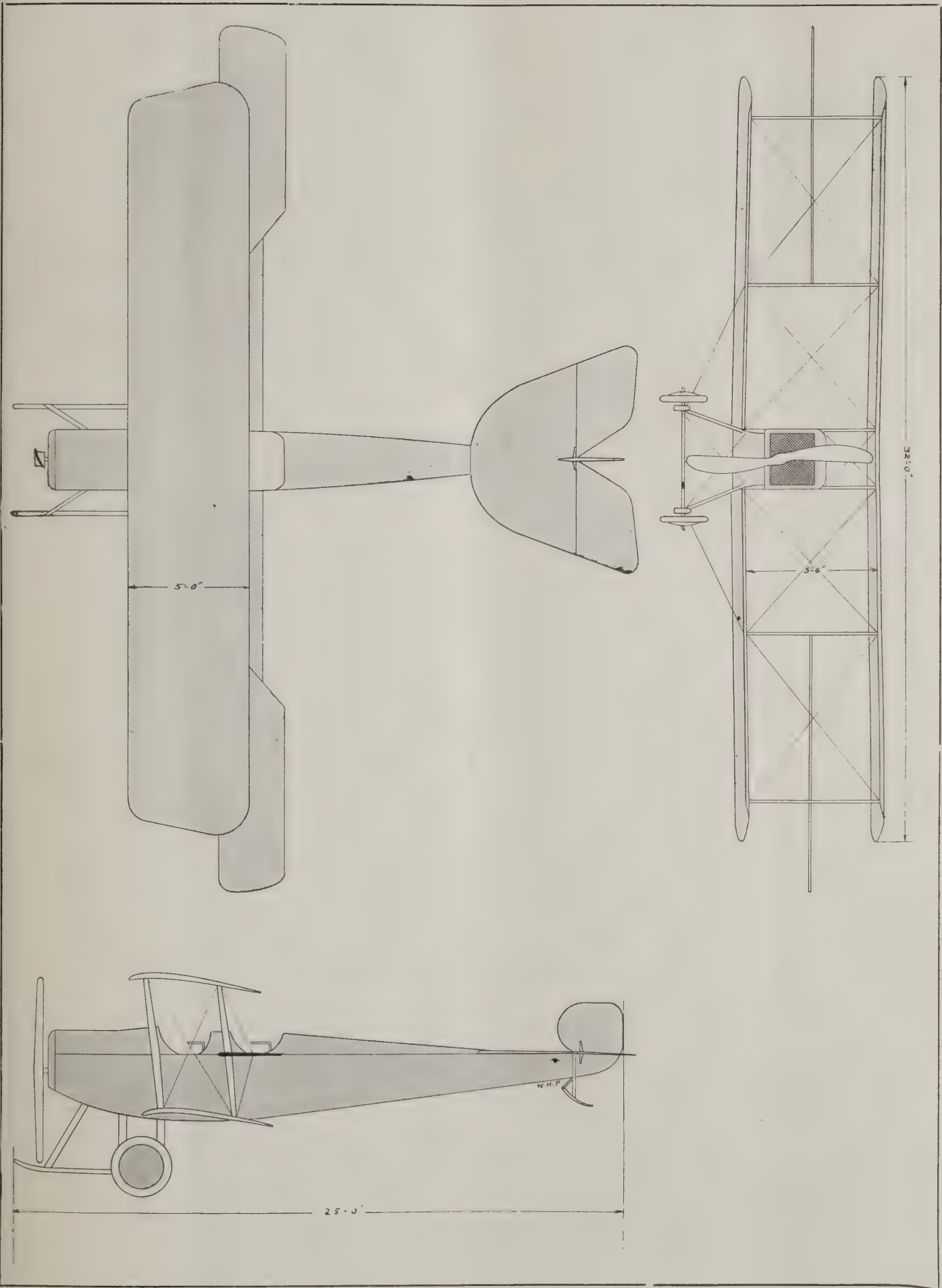
The wings of the model "N" type are of latest approved section; one-piece type. Wing frames are built up carefully of ash and spruce, with beams shaped and grooved by hand, important joints copper strapped, the whole securely stayed with piano wire. Covers are of unbleached linen, thoroughly coated with Curtiss Aero varnishes. The wings have a spread of 32 feet, for both the upper and lower surfaces; the area of lifting surface is approximately 350 square feet.

### *Fuselage*

The fuselage is of rectangular section, 26 inches wide by 35 inches high at the cockpit, tapering to nothing at the rudder. The longerons are ash strips 1 1/4 inches in diameter, tapering to 1 inch. The fuselage is corner braced with 9 sets of struts, which are joined with corner clamps without piercing the longerons. Each section is crosswired in three directions. The third and fourth vertical struts are placed so as to act as wing struts, and they have extensions running to the upper surface.

The streamline effect is preserved throughout by enclosing the front of the fuselage, with motor and mountings, in a cowl of Duralumin, slotted to admit air to the motor. Streamline cowls protect the cockpits, and deflect the wind from the pilots as well as shield from the weather the dashboards on which the instruments are mounted. Behind the cockpits the fuselage is covered with waterproofed linen.





The Curtiss Model "N" Military Tractor



*Description of Curtiss "Model N" (Continued)*

### Motor Installation

The Curtiss model O-X motor is mounted on engine beds of laminated ash and spruce 2 inches by 3 inches. It is fastened in front to a plate of 3-32 inch steel, which joins the longerons and also carries the radiator. The rear ends of the engine beds are mounted on a hardwood cross member framed into the second pan of vertical struts of extra size.

### Landing Gear

The fuselage is supported by an undercarriage consisting of two supporting struts on each side, borne on two stream-lined wire wheels. The tires are 26 inches by 5 inches. Wheels are attached with rubber band shock absorbers. Protection from an upset in case of an unusually hard landing is afforded by two white oak skids, six feet long, turned up in front; they also help shield the propeller. The tail skid is of white oak and sprung on with rubber bands.

### Controls

Single acting turn-up ailerons are attached to the trailing edge of the upper and lower surfaces. The vertical rudder has an

area of 30 inches by 36 inches, is well secured to the stern-post, and is double wired. Horizontal rudders, or flippers, have an area of 16 square feet. Either the Curtiss system of control, consisting of shoulder yoke and steering wheel, or the Deperdussin system, with foot-bar, is to be provided.

### Dimensions

Span Top—32 feet.  
Span Bottom—32 feet.  
Chord—5 feet.  
Gap—5 1-2 feet.  
Area—320 square feet.  
Length Over All—24 feet.  
Landing Gear—Two Wheel Curtiss with tail skid.  
Lateral Control—Ailerons between Beams.  
Fuel Capacity—32 gallons.  
Propeller—Curtiss 8 feet 4 inches by 5 1-2 feet.  
Propeller Position—Tractor.  
Speed Range Loaded—40-80 M. P. H.  
Climbing Speed—4000 in 10 minutes.  
Gliding Angle—1 in 6.  
Useful Load—Pilot, passenger, 4 hours' fuel and extras—500 lbs.  
Weight of Machine Loaded—1800 pounds.  
Load per Square Foot of Surface—5.6 pounds.

## San Diego to Be Permanent Aeronautical Training Base

North Island is to become the permanent training and experimental base for the aeronautical branch of the United States army, according to a statement given out by Brigadier General George P. Scriven, chief of the army aeronautical bureau.

The first aero squadron, composed of twelve junior military aviators, ninety aviation mechanics, about six military speed scouts, two motor trucks and other accessories, will be detached from the North Island camp about July 1 and established at a permanent base at San Antonio, Texas. This move is to be made, according to General Scriven, for the purpose of permitting qualified military aviators to engage in reconnaissance work in conjunction with large bodies of field artillery, cavalry and infantry. Several large hangars, quarters for the enlisted men, and other buildings, are now under construction at San Antonio. General Scriven believes that everything will be in readiness for the First aero squadron about July 1, and accordingly the officers, men and equipment will leave North Island at that time.

North Island, however, is to become the most important training and experimental station in the country. Large numbers of

untrained infantry and cavalry officers will be sent to San Diego to receive instruction in the art of military aviation while the equipment of the shops will be augmented to increase the experimental part of the aviation branch.

Eight Curtiss military biplanes have been ordered delivered to the army April 8. They represent, according to General Scriven, the latest structural requirements for reconnaissance work and embody many new features that were recommended through observations made by army observers on the battlefields of Flanders.

General Scriven said that the army will not experiment this year with dirigibles.

"This type of aircraft has not proved of value for military purposes in the European war, thus far," he said, "and therefore I do not see any reason for this country to expend a large sum of money building them. A modern Zeppelin represents an expenditure of \$1,000,000 and we would have to have more money for aviation purposes before we could start to experiment with this type of air scout."



*The Burgess-Dunne armored war-plane equipped with rapid fire gun. A new and improved machine of this type heavily armored and equipped with full military appliances and 110 h. p. Gyro motor has just been completed for the Russian government.*

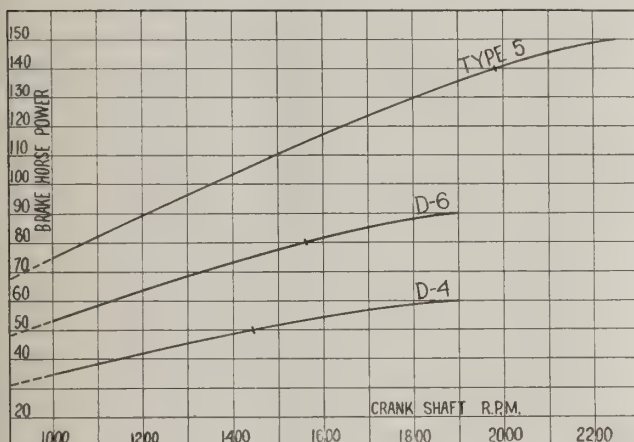


# Sturtevant Motors

By N. MacCough, M. E.

THE B. F. Sturtevant Co., of Hyde Park Mass., is manufacturing three types of four cycle, water cooled aeronautical motors; the Model D-4 with four cylinders; the Model D-6 with six cylinders; and the Model 5 with eight cylinders.

The most noticeable characteristic of these motors is their close adherence to accepted automobile practice. The use of the L-head type of cylinder eliminates a large number of valve parts in comparison with the overhead valve arrangement and hence makes a lighter valve mechanism. Since the pounding caused by the action of this mechanism is the chief limitation to the speed at which an engine will stand up for steady load, the importance of reducing the total weight of these parts may be readily appreciated. Many designers contend that the overhead valve gives more power for a given size of cylinder than the L-head type, but one could hardly expect that any other construction could improve the horsepower of these engines as given by the accompanying curves. These curves are particularly valuable because of the overrating of many motors now on the market. The Model D-4 is rated at 50 H.P. and the Model D-6 at 80 H.P., while the Model 5 is rated at 140 H.P. at a crankshaft speed of 2,000 R.P.M.



The new Model 5 eight-cylinder "V" type motor, with a bore of 4 inches and a stroke of  $5\frac{1}{2}$  inches has several special features which are new to aeroplane as well as automobile construction and show the work of excellent designers. One of the first of these features which is noticed from the side view, is the method of taking the exhaust gases to the sides of the motor instead of into the centre as is usual with L-head "eights." In the automobile field the hot exhaust manifolds between the cylinders have caused an alarming amount of profanity when carburetor adjustments, etc. were necessary, and it is also not desirable to have so much heat surrounding the magnetos.

Another feature which will impress itself on all who are familiar

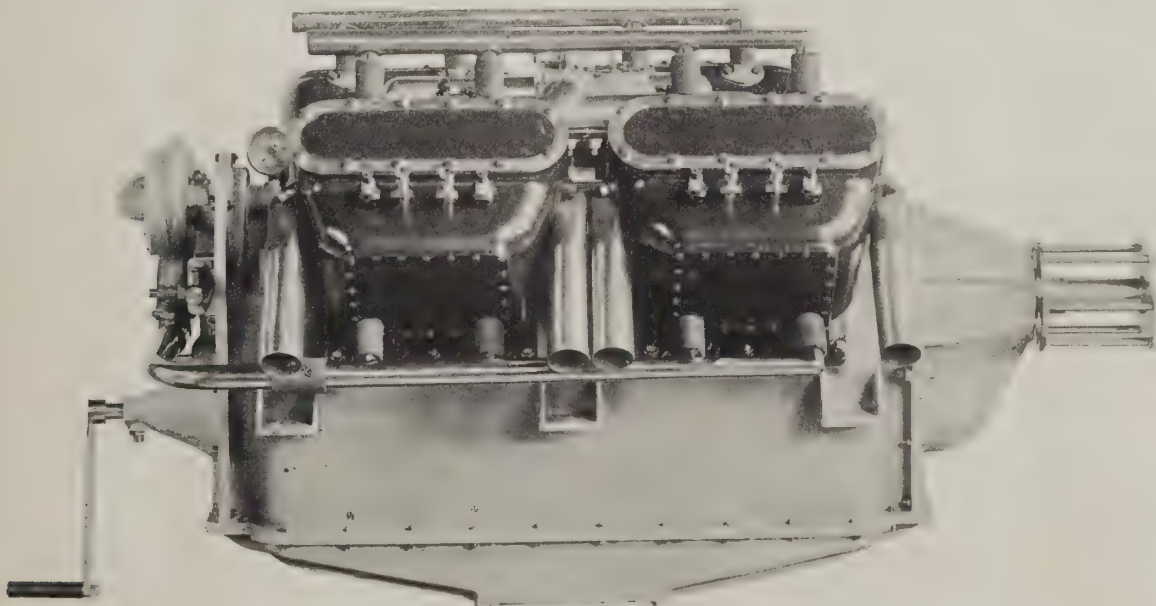
with aeroplane engines, particularly when one looks at the deep, box-like crank-case, is the solid rigid construction used. This will be appreciated when one realizes that when running at the usual speed of aeroplane motors, this motor would deliver but 90 to 100 horsepower, and the unit weight would be nearly six pounds per horsepower. By the use of exceedingly light and strong pistons and connecting rods, and by paying much attention to the design of every detail of the cooling and oiling systems, it is possible to run this motor at 2,000 R.P.M. and still have remarkable reliability and wearing qualities. At this speed the output is 140 H.P. and the unit weight less than four pounds per horsepower, which it would be impossible to obtain in the low speed type of motor and still use such practical and durable construction.

Such speed is, of course, altogether too high for an efficient propeller, and for this reason a reduction gear is contained within an integral oil tight casing on the opposite end of the motor from the timing gears, and a shaft extends from this for the application of the propeller. Different ratios may be supplied, giving a propeller speed from 1,000 to 1,500 R.P.M. at a normal crankshaft speed of 2,000 R.P.M. Spur gears are used and these are of hardened chrome nickel steel. The propeller shaft is carried on two large ball bearings, and is provided with a ball thrust bearing to take the thrust of a tractor or propeller as the case may be.

The cylinders are cast in pairs of semi-steel with integral water jackets and mounted at an angle of  $90^\circ$  with each other, being staggered so as to allow the connecting rods of opposite cylinders to be placed side by side on the same crank pin, and also a separate cam for each valve. They are of the L head type with both intake and exhaust valves on the inside of the "V" so that all valves can be operated from one camshaft.

The valves are of hardened tungsten steel, the heads and stems being made from one piece. They may be readily removed from the cylinders for inspection or grinding without disturbing any other part of the motor. That they are of large diameter is unquestionable when one looks at the power curve which is almost a straight line up to 2,000 R.P.M. and does not fall off excessively at considerably higher speeds.

Considerable attention has been given to the cooling system. There are two water inlets and outlets to each block of cylinders. The water space around the cylinders and valve seats has a minimum width of 7-16 inches, and the two aluminum cover plates make possible very accurate molding and thorough cleaning in the foundry. The valve caps are screwed into the cylinder heads over each valve in the usual way but they are then covered with an aluminum plate and the cooling water passes over them. This allows a very free and unrestricted flow of water over the entire cylinder head and around the spark plugs, which is particularly important as much ignition trouble is caused by overheated plugs. An unusually large centrifugal pump delivers 65 gallons of water per minute into the cylinder jackets, causing so rapid a circulation that every part of the cylinders is assured of a uniform temperature, and a smaller radiator may be used than where there is a slower circulation.





Special attention has been given to the construction of unusually light reciprocating parts which are essential in a motor of this type. The pistons are of the same material as the cylinders, ribbed in the head for strength and cooling and provided with three compression rings. The piston pin is made of chrome nickel steel, bored hollow and ground. The connecting rods are of H section, machined all over from forgings of a special air-hardening chrome nickel steel which after being heat-treated has a tensile strength of 250,000 pounds per square inch. They are consequently very strong and yet unusually light, and being machined all over are of absolutely uniform section which gives as nearly perfect balance as can be obtained. The big ends are lined with Parsons' white brass and the small ends bushed with phosphor bronze. The connecting rods are all alike and not forked as is usual in eight-cylinder automobile motors.

The crankshaft is machined from a billet of the highest grade nickel steel properly heat treated to obtain the best properties of this material. It is of large diameter and bored hollow throughout, insuring maximum strength with minimum weight. It is carried in three unusually large bearings lined with renewable bushings of Parsons' white brass.

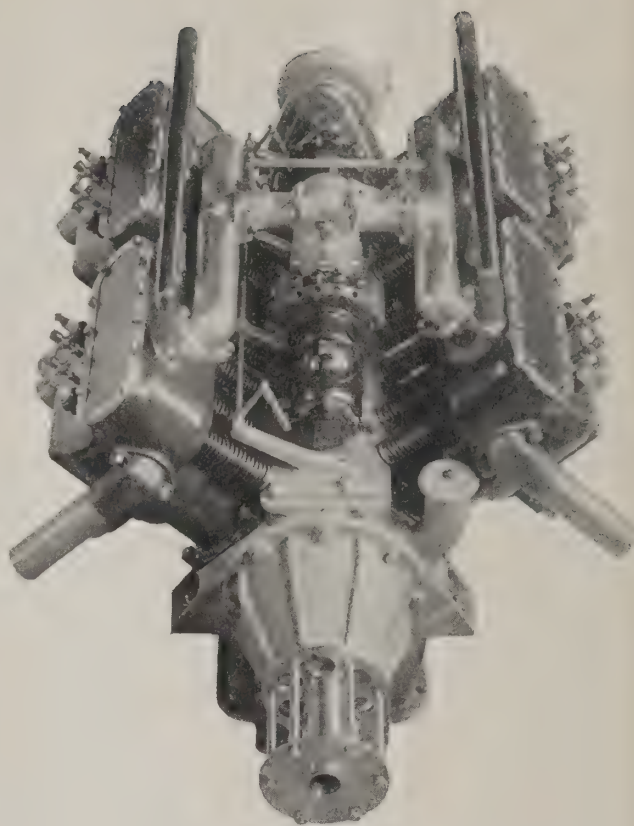
The base consists of two castings of a special aluminum alloy. The upper half is designed with a view to strength and rigidity rather than extreme lightness. It extends considerably below the centre line of the crankshaft to further increase its strength. The lower half is of light construction for the purpose of containing the lubricating oil and is ribbed on the bottom to assist in cooling the oil.

The lubricating system is another unusual feature. A rotary oil pump takes the oil contained in the sump and delivers it under high pressure to the main crankshaft bearings and into the hollow crankshaft to the connecting rods from which it is thrown off in a spray onto the cylinder walls. The camshaft is also hollow and serves as a duct to supply the oil to each camshaft bearing. The cam surfaces are lubricated by dipping in a trough of oil which is held in the compartment in the base containing the camshaft. After being forced through the bearings the oil returns by gravity to the sump through a fine mesh screen which covers the entire lower surface of the base and is thereby filtered before being used again.

Besides the oil pressure pump there is a small plunger pump operated from the end of the camshaft to be seen on the outside of the motor just under the water pump. This pump draws oil from an auxiliary tank located anywhere in the aeroplane below the engine and delivers oil into the sump faster than it is used by the motor. The excess oil overflows through a standpipe into the auxiliary tank again so that a constant amount of about two gallons of oil is maintained in the sump. The reason for the use of this auxiliary oil pump is that it is desirable to hold as much as two gallons of oil in the base for the pressure pump to circulate in order that the oil will not become too hot. Fresh oil will be constantly supplied to the motor without any attention on the part of the operator.

Ignition is by two four-cylinder waterproof Bosch magnetos, one for each set of cylinders. They run at crankshaft speed and are more durable than the eight-cylinder magnetos which must run at twice this speed, which would be 4,000 R.P.M. on this motor.

One of the new duplex Zenith carburetors designed especially for eight-cylinder motors is used. It is equivalent to two car-

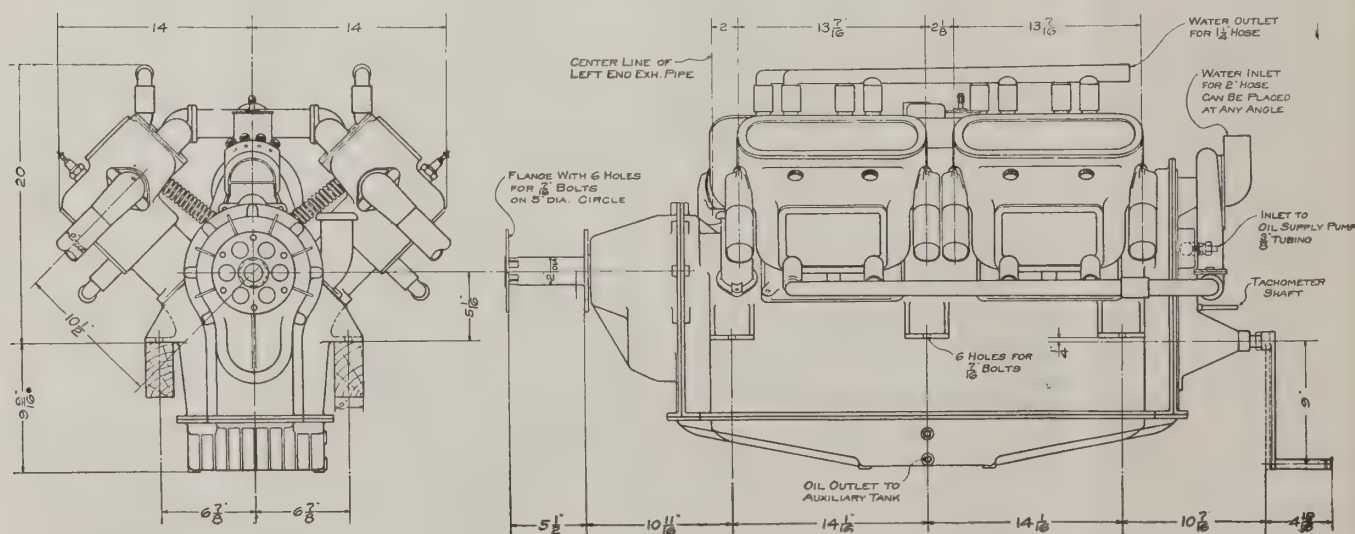


buretors with a single float chamber, one carburetor for each set of four cylinders. Provision is made to supply hot air from the exhaust so that the mixture will not be affected in changes in the temperature of the air.

A starting crank is provided by which the motor may be started from the machine and the crank handle may be extended through the control board if desired. Light weight and extremely efficient mufflers can also be supplied, one for each group of four cylinders, which effectively silences the exhaust with only a slight loss of power.

This motor complete with carburetor, magnetos, starting crank, propeller hub, bolts and front plate, but without radiator and propeller, weighs 550 pounds, or a trifle over 3.9 pounds per horsepower. During a four-hour run, delivering an average of 141.8 horsepower at an average speed of 2,017 R.P.M. the motor consumed 290 pounds of 74° gasoline, and 26 pounds of oil. This is equivalent to only 0.511 pounds of gasoline and 0.045 pounds of oil per horsepower-hour.

The D-A and D-6 motors will be described in a later issue.





## RECORDS

## AMERICAN AVIATION RECORDS

(CHECKED TO FEBRUARY 15, 1915.)

A. SPEED. 1. Time on a given distance. (a) Aviator Alone.

DISTANCE		Holder	Place	Date	Machine	Motor	Time
Kilom.	Miles						
5	3.107	Jules Vedrines	Clearing, Ill.	Sept. 9, 1912	Deperdussin	140 Gnome	1'43.38"
10	6.214	Jules Vedrines	Clearing, Ill.	Sept. 9, 1912	Deperdussin	140 Gnome	3'27.87"
15	9.32	Jules Vedrines	Clearing, Ill.	Sept. 9, 1912	Deperdussin	140 Gnome	5'11.58"
20	12.427	Jules Vedrines	Clearing, Ill.	Sept. 9, 1912	Deperdussin	140 Gnome	6'55.95"
30	18.641	Jules Vedrines	Clearing, Ill.	Sept. 9, 1912	Deperdussin	140 Gnome	10'32.51"
40	24.855	Jules Vedrines	Clearing, Ill.	Sept. 9, 1912	Deperdussin	140 Gnome	14' 3.59"
50	31.969	Jules Vedrines	Clearing, Ill.	Sept. 9, 1912	Deperdussin	140 Gnome	17'34.88"
100	62.137	Jules Vedrines	Clearing, Ill.	Sept. 9, 1912	Deperdussin	140 Gnome	35'16.65"
150	93.205	Jules Vedrines	Clearing, Ill.	Sept. 9, 1912	Deperdussin	140 Gnome	53' 4.73"
200	124.274	Jules Vedrines	Clearing, Ill.	Sept. 9, 1912	Deperdussin	140 Gnome	1 hr. 10'56.85"
250	155.342	St. C. Johnstone	Mineola, N. Y.	July 27, 1911	Moisant	50 Gnome	3 hr. 32'56 2/5"
(b) Aviator and One Passenger.							
10	6.214	C. Grahame-White	Nassau Boulevard, N. Y.	Sept. 30, 1911	Nieuport	70 Gnome	6'13 2/5"
20	12.427	C. Grahame-White	Nassau Boulevard, N. Y.	Sept. 30, 1911	Nieuport	70 Gnome	12'26 3/5"
30	18.641	C. Grahame-White	Nassau Boulevard, N. Y.	Sept. 30, 1911	Nieuport	70 Gnome	18'42"
40	24.855	C. Grahame-White	Nassau Boulevard, N. Y.	Sept. 30, 1911	Nieuport	70 Gnome	24'49 4/5"
50	31.068	C. Grahame-White	Nassau Boulevard, N. Y.	Sept. 30, 1911	Nieuport	70 Gnome	31'01 3/5"
(c) Aviator and Two Passengers.							
5	3.107	T. O. M. Sopwith	Chicago, Ill.	Aug. 15, 1911	Wright	30 Wright	6'56 2/5"

2. Distance in a given time. (a) Aviator Alone

DISTANCE		Holder	Place	Date	Machine	Motor	Time
Kilom.	Miles						
40	24.855	Jules Vedrines	Chicago, Ill.	Sept. 9, 1912	Deperdussin	140 Gnome	15'
80	49.7	Jules Vedrines	Chicago, Ill.	Sept. 9, 1912	Deperdussin	140 Gnome	30'
166.6	103.5	Jules Vedrines	Chicago, Ill.	Sept. 9, 1912	Deperdussin	140 Gnome	1 hr.
141.97	88.216	St. C. Johnstone	Mineola, N. Y.	July 27, 1911	Moisant	50 Gnome	2 hrs.
214.57	133.327	St. C. Johnstone	Mineola, N. Y.	July 27, 1911	Moisant	50 Gnome	3 hrs.
283.628	176.238	St. C. Johnstone	Mineola, N. Y.	July 27, 1911	Moisant	50 Gnome	4 hrs.
(b) Aviator and One Passenger.							
24.14	15	C. Grahame-White	Squantum, Mass.	Sept. 4, 1911	Nieuport	70 Gnome	15'
36.24	30	C. Grahame-White	Nassau Boulevard, N. Y.	Sept. 30, 1911	Nieuport	70 Gnome	30'

3. Greatest speed obtained, whatever the length of the flight.

Holder	Place	Date	Machine	Motor	Kilom.	Speed per hour	
						Miles	Miles
Jules Vedrines	Chicago, Ill.	Sept. 9, 1912	Deperdussin	140 Gnome	174.1	108.18	
(b) Aviator and One Passenger.							
C. Grahame-White	Squantum, Mass.	Sept. 4, 1911	Nieuport	70 Gnome	101.762	63.232	
(c) Aviator and Two Passengers.							
T. O. M. Sopwith	Chicago, Ill.	Aug. 15, 1911	Wright	30 Wright	56.263	34.96	

B. GREATEST DISTANCE. Aviator Alone

Holder	Place	Date	Machine	Motor	Distance Covered	
					Kilom.	Miles
W. C. Robinson	Des Moines, Ia. to Kentland, Ind.	Oct. 17, 1914	Parasol type	Robinson Radial	535.300	332

C. DURATION (a) Aviator Alone.

Holder	Place	Date	Machine	Motor	Time	
					Time	Time
Lieut. J. H. Towers, U.S.N.	Annapolis, Md.	Oct. 6, 1912	Curtiss hydro	75 Curtiss	6 hrs. 10'35"	
(b) Aviator and One Passenger.						
Lieut. T. F. Dodd, U.S.A.	San Diego to Burbank, Cal.	Feb. 14, 1914	Burgess-Tractor biplane	70 Renault	4 hrs. 43'	
(c) Aviator and Two Passengers.						
Lt. T. deW. Milling, U.S.A.	Nassau Boul., N. Y.	Sept. 26, 1911	Burgess-Wright	30 Wright	1 hr. 54'42 3/5"	

D. ALTITUDE. (a) Aviator Alone

					Metres	Feet
Capt. H. LeRoy Muller, U.S.A.	San Diego, Cal.	Oct. 8, 1914	Curtiss Tractor	Curtiss Ox	5,528.4	16,794
(b) Aviator and One Passenger.						
Lt. J. E. Carberry, U.S.A.	San Diego, Cal.	Jan. 5, 1915			3,834.3	11,690
2. Climbing. (Upward Vertical Speed.)						Altitude
(a) Aviator Alone						Time
R. Simon and T. O. M. Sopwith (tie)	Chicago, Ill.	Aug. 19, 1911	Bleriot's Simon Sopwith	50 Gnome 70 Gnome	Meters 500* (1,640 ft.)	3'35"
(b) Aviator and One Passenger.						
C. Grahame-White	Nassau Boul., N. Y.	Sept. 30, 1911	Nieuport	70 Gnome	1,000* (2,280 ft.)	9 min.

E. ALIGHTING

Holder	Place	Date	Machine	Motor	Distance From Mark	
					Weight	Weight
T. O. M. Sopwith	Nassau Boul., N. Y.	July 22, 1911	H. Wright biplane (Farman-type)	60 h.p.E.N.V.	1 ft. 5 1/4 in.	
F. WEIGHT CARRYING.						
P. O. Parmelee	Chicago, Ill.	Aug. 19, 1911	Wright	30 Wright motor	458 lbs.	

\*World's Records.

## HYDROAEROPLANE RECORDS

DISTANCE: Aviator and One Passenger.

Holder	Place	Date	Machine	Motor	Distance Covered	
					Miles	Miles
Lawrence B. Sperry	Brooklyn Navy Yard to Ossining and Return	Jan. 20, 1915	Curtiss Flying Boat		60	
(b) Aviator and Two Passengers.						
Adolph G. Sutro	San Francisco Bay, Cal.	Sept. 28, 1913	Sutro Hydro Biplane type		33 1/2	

DURATION

Aviator and One Passenger.

Holder	Place	Date	Machine	Motor	Time	
					Time	Time
Lawrence B. Sperry	Brooklyn Navy Yard to Ossining and Return	Jan. 20, 1915	Curtiss Flying Boat		1 hr. 25'	
(b) Aviator and Two Passengers						
Adolph G. Sutro	San Francisco Bay, Cal.	Sept. 28, 1913	Sutro Hydro Biplane type		1 hr. 15'35"	

ALTITUDE

Aviator and Two Passengers.

Holder	Place	Date	Machine	Motor	Distance Covered	
					Feet	Feet
Adolph G. Sutro	San Francisco Bay, Cal.	Sept. 28, 1913	Sutro Hydro Biplane type		750	

## CROSS COUNTRY

DISTANCE (a) Aviator Alone.

Holder	Place	Date	Machine	Motor	Distance Covered	
					Miles	Miles
W. C. Robinson	Des Moines, Ia., to Kentland, Ind.	Oct. 17, 1914	Parasol type monoplane	Robinson Radial	332	
(b) Aviator and One Passenger.						
Lt. T. F. Dodd, U.S.A.	San Diego to Burbank, Cal.	Feb. 14, 1914.	Burgess Tractor biplane	70 Renault	244.18	

DURATION (a) Aviator Alone

Holder	Place	Date	Machine	Motor	Time	
					Time	Time
C. Murvin Wood	Garden City, L. I., to Gathersburg, Md.	Aug. 8, 1913.	Moisant military monoplane	56 Gnome	4 hrs. 31'	
(b) Aviator and One Passenger						
Lt. T. F. Dodd, U.S.A.	San Diego to Burbank, Cal.	Feb. 14, 1914.	Burgess Tractor biplane	70 Gnome	4 hrs. 43'	



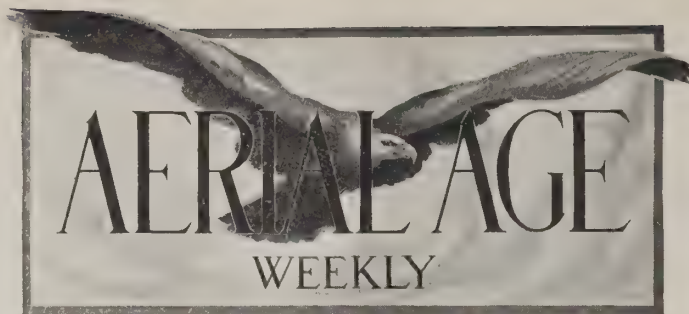
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SUBSCRIPTION RATES:  
Domestic, \$4.00 per year  
Foreign, \$5.00

ADVERTISING RATES:  
One page \$80.00, Half \$45.00,  
Quarter \$25.00, Eighth \$14.00,  
Sixteenth \$8.00.

Discounts: for 13 consecutive inser-  
tions, 10%; for 26 consecutive inser-  
tions, 15%; for 52 consecutive inser-  
tions, 17%.  
Cash discount, 3%, 10 days.  
For other rates see Classified  
Department.

PUBLISHED WEEKLY BY THE AERIAL AGE COMPANY, Inc., 116 West 32nd Street, New York City

*Application made for entry as second-class matter at the Post Office at New York, N. Y.*

VOL. I.

NEW YORK, MARCH 29, 1915

No. 2

## The Navy to Construct Aeroplanes

**A**DDITIONAL information regarding the report that the Navy has prepared plans for two aircraft factories seems to show that the report is based on a proposition submitted to the Navy Department by Representative William S. Vare, of Pennsylvania, who would like to see an armor plate plant and an aircraft plant established at the Philadelphia Navy Yard.

The information does not confirm that part of the report which stated that the plans for two plants have been completed and only await the sanction of Congress.

It is to be hoped that there is no foundation to this outside of the desire on the part of Mr. Vare to have a plant in his district. We feel certain that as soon as Mr. Vare becomes acquainted with the conditions he will not insist on trying to make the Navy squander what little money it has for aeronautics in experiments which have been tried by England and France, at a cost of over five million dollars, and found costly and fruitless. As stated in the report from the Bureau of Construction and Repair and Bureau of Steam Engineering of the Navy, transmitted to Congress by Secretary Daniels, and printed in the first number of *Aerial Age*:

"The establishment of a Government plant for the general manufacture of aircraft would require a complement of officers that can ill be spared at the present time, not only because the Navy has a very limited number of specially trained designers in this class of work, but because such a plant would call for the diversion from actual flying work of many of the most competent operators. As stated above, the establishment of such a plant would tend greatly to discourage the valuable initiative and resources of private manufacturers, who should be encouraged and stimulated as a most valuable asset not only in the development of aircraft but also for turning out such craft in quantities in time of an emergency. Any government plant which could be established in the near future would be entirely inadequate in war time, as aircraft would be required in large quantities in such an emergency."

## Aero Clubs of America and Illinois Revolt Against Congressmen J. J. Fitzgerald and J. R. Mann

**T**HE Aero Clubs of America and Illinois have, at last, revolted against Congressmen John J. Fitzgerald and James R. Mann. These two aero clubs, who count in their membership the leading sportsmen, business men, scientists, and aeronautical authorities of the United States, have worked hard and generously contributed financially and otherwise to foster the development of aeronautics. Thanks to their efforts, and the efforts of other aero clubs, this young art was enabled to develop in this country in spite of the utter lack of support from the United States government, and reach the point where aircraft afford solutions to difficult problems of transportation and become a necessary auxiliary to the Army and Navy. Neither club sought to use its power to secure special attention to aeronautics in Congress, but stood without complaint for four years of utter disregard to the aeronautical needs of the Army and Navy and lack of consideration to the possibilities of carrying mail by aeroplane—and thus solve some difficult problems of mail distribution.

Their patience began to strain when, on December 15th, 1913, Congressmen John J. Fitzgerald, of New York, and James R. Mann, of Illinois, used stupid expressions of ridicule and caustic remarks to defeat the Aero Mail Bill, H. R. 3393, which provided for an appropriation of \$50,000 for experiments in mail carrying by aeroplane. This bill had the indorsement of Postmaster General Bursleson, Second Assistant Postmaster Joseph Stewart, and the approval of the Committee on Post Office and Post Roads, and was a progressive measure in every way. But Messrs. Fitzgerald and Mann led the opposition and defeated it. The aeronautical movement indulgently excused their ignorance, just chided and awaited the action of the next session. As the war came meantime, and the wonderful daily achievements of aviators on both sides fully demonstrated the potential value of aircraft for military purposes it was not thought necessary to urge these two influential members to give full consideration to the aeronautical needs of the Army and Navy. But Messrs. Fitzgerald and Mann acted worse than ever. They led the opposition and succeeded in reducing the Army and Navy appropriations to \$300,000 and \$500,000 respectively. The Senate, appealed to, increased the former to \$400,000 and the latter to \$1,000,000. In the joint conference the first was again reduced to \$300,000; the second remained.

This snapped the patience of the Aero Clubs of America and Illinois, and they have revolted.

Having a membership of men of national importance these clubs do not plead, or resort to petitions. Their protests are striking and damaging. Mr. Henry A. Wise Wood, vice president of the Aero Club of America, in an editorial printed in *Flying* and reprinted in the New York *Herald*, expresses the Aero Club of America's condemnation of Mr. Fitzgerald as follows:

"What a travesty upon efficient government it is to place the purse strings of a wealthy and educated people, a hundred millions strong, in the hands of one, for instance, who in discussing naval affairs, and possibly without having had in his life an hour's training in them, can reply as did Chairman Fitzgerald, of the Appropriations Committee of the American Congress, to Mr. Roberts, of Massachusetts. When asked if he did not know that the General Board of the Navy had asked for a certain sum for aeronautics, Mr. Fitzgerald replied: **'I did, and that is the reason I pay so little attention to their recommendations.'** By this revelation of his habit of thought this man disclosed, as it seldom is disclosed, the insuperable difficulties confronting the men who we have trained at great cost to fashion and administer our means of defense, the running score of presumptuous ignorance upon the part of those whom we pay to conduct the business of the nation, which continually saps our strength. Would any business man entrust his affairs to the keeping of an untrained individual who should hold such an attitude toward the technical staff of his establishment? Hardly. Mr. Robert's rejoinder, that it would be helpful did the gentlemen pay attention to those who know, was wholly fitting.

"One other illustration will suffice, of the nature of the drag which those whom we occasionally elect to office put upon progress and efficiency. The Governing Board of the Navy had recommended the expenditure of \$5,000,000 upon the founding of our naval air power—less than half the cost of one equipped dreadnought. This amount the Naval Affairs Committee had reduced to \$1,000,000, and Chairman Fitzgerald was striving to have cut down to \$300,000. To his assistance came Mr. Witherspoon, of Mississippi. Mr. Witherspoon thought that \$300,000 would be ample; that thirty aeroplanes would be enough; that the Navy would then have forty; that he could 'not see the slightest necessity for any more than that.' And



further, that he considered the desire for such a substantial aerial fleet as the General Board wished to provide, an attempt to 'ape foreign governments in everything they do.' This man, although not evincing the slightest knowledge of the subject, felt himself competent to negative the General Board, the Naval Chief of Aeronautics, and the House Naval Committee, and decide just how much of an aeronautical establishment our forces afloat should have! Could ignorance go further to frustrate the scientific development of our Navy?"

The Aero Club of Illinois's protest is reported by the Chicago newspapers as follows:

"A hydroaeroplane for every battleship is the slogan of the Aero Club of Illinois, and this organization promises to make its demand heard at the polls.

"Congressman James R. Mann and every other representative who opposes sufficient appropriations for aeronautics properly to equip the Navy and Army with flying machines are warned that they will meet opposition when they come up for re-election, in a letter sent out today by J. J. McCarthy, Chairman of the Publicity Committee of the club.

"There are only a dozen safe aeroplanes between the Army and Navy, with none at the Panama Canal, the Philippines or Hawaii," says the letter. 'It is a known fact that the leading military authorities of the different nations at present involved in warfare propose to each construct from 5,000 to 10,000 aeroplanes for military and naval purposes as rapidly as possible.

"A hydro-aeroplane costing \$7,500 might save the loss of a \$10,000,000 battleship. For reconnaissance duty at sea a hydro-aeroplane could be launched from a battleship, and flying to an altitude of 4,000 to 5,000 feet, observe every object within a radius of 200 miles, preventing surprise action of hostile warships before they could even get within six to ten hours' distance.

"I unqualifiedly make the statement there should be a hydro-aeroplane aboard every battleship in the Navy.

"The action of James R. Mann, representative to Congress from Illinois, in so bitterly contesting and fighting an increase in the appropriation for a larger aviation corps is probably only consistent with his lack of knowledge on aeronautical subjects. His statements, according to the stenographic report, are ridiculously childish and impractical, and unworthy of a man of the supposed mental caliber a Congressman should possess."

The score of other aero clubs affiliated with these two clubs will undoubtedly take up the fight in the near future. Together they can make Congress give thorough consideration to the aeronautical needs of the Army, Navy and Post Office.

## Aeroplanes Destroy Railway Junctions

IN the United States some of the authorities are unwilling to concede that aeroplanes can be used effectively for anything except scouting. The report of the British victory at Neuve Chapelle contains the following significant statement: Equally important was the success achieved by British airmen in destroying the railway junctions at Menin and Courtrai. These are on one of the German main lines of communication, and their destruction will delay the arrival of new contingents of troops which are reported to be again concentrating in Belgium for another attempt to break through to Calais and Boulogne.

It was of this battle that James Dunn, of the *Daily Mail*, reported.

"The British success at Neuve Chapelle and Epinette was due largely to the wonderful work of the allied aeroplanes. Not a German gun was laid, not a body of troops moved without being detected by the eyes of the British army.

"German officers in Bruges admit their air service is hopelessly outclassed in numbers, daring and intelligence by the Allies. From the sea to Ypres the sky is swept by aeroplanes practically every day, the British and French airmen competing in feats of skill and daring while the Germans no longer face duels in the air, past contests having proved disastrous."

## At the Dardanelles

REPORTS of British and French aviators of the extensive damage inflicted on the Turkish forts along the Dardanelles in the terrific bombardment of the Allied fleet on March 18th show that the work accomplished more than makes up for the loss of three battleships suffered by the Allies. Under orders from Vice-Admiral de Robeck the aviators circled low over the forts which had been the target for the big guns and reported that the three principal forts, Killid-Bahr, Chanak and Hamidieh, were demolished and that two troublesome Turkish batteries north of Fort Killid-Bahr were destroyed. According to the aviators large bodies of Turkish troops were engaged in making repairs to the fort, but it was not believed that they could be restored.

As a result of these reports Vice-Admiral de Robeck has determined to renew the bombardment at once, and awaits only

favorable weather conditions to complete the demolishing of the forts. The reports of the aviators were delivered to the council of Admirals and Captains of the fleet, assembled on board the French flagship Suffren, and it was enthusiastically agreed that the bombardment should be continued without awaiting the arrival of land forces.

## Correction

CAPTAIN Thomas S. Baldwin, the dear, youthful old Captain, whose fame has crossed the seven seas so many times that even in the wilds of Siam people believe that he was the man who put the aero in aeronautics, has brought a charge of neglect against the editors of *Aerial Age*. The offense is a serious one. The Captain subscribed to *Aerial Age* as soon as he heard of it and happened to be the seventh subscriber. As his pilot certificate bears number seven he found much satisfaction in the coincidence. But, somehow, his name was overlooked and the list of the first twenty-five subscribers did not contain his name. When he saw the omission his heart fell and for the first time we saw him grieved.

It is needless to say that it was an unfortunate oversight—and we extend the dear Captain our deepest regrets—and print herewith the list of the first thirty subscribers, which includes his name with the correct number.

## First Thirty Subscribers of Aerial Age

- 1 Chester Huntington
- 2 Huntington Aircraft Company
- 3 Dr. Frank Austin Roy
- 4 Geo. W. Turney
- 5 Alan R. Hawley
- 6 Harold H. Brown
- 7 Captain Thomas S. Baldwin
- 8 John Dale Cooper
- 9 J. B. R. Verplanck
- 10 Israel Ludlow
- 11 Thomas M. Moore
- 12 Henry A. Wise Wood
- 13 Frederick McKay
- 14 Charles de San Marzano
- 15 Thomas F. Powers
- 16 Katherine Stinson
- 17 K. M. Turner
- 18 Bruce Barton
- 19 Frank C. Perkins
- 20 Evert Jansen Wendell
- 21 Dr. Henry L. E. Johnson
- 22 Harry N. Atwood
- 23 E. N. Hunt
- 24 Steven McGordon
- 25 William H. Williams
- 26 William H. Bliss
- 27 Henry S. Villard
- 28 Professor David Todd
- 29 Thomas Dreier
- 30 Joseph A. Steinmetz

## Seagoing \* \* \* Aeroplanes for the Navy

IT is not the time for half measures. The navy, no matter how many dreadnoughts and submarines it contained, would not be adequate without a large flotilla of aeroplanes for attack as well as reconnaissance. Our present naval flying corps is doubtless considered a joke by Great Britain, France and Germany. When thirty-four aeroplanes cross the Channel and bombard bases on the Belgian coast without losing a man it is unpleasant to realize that the United States could do nothing of the sort. Our meagre array of aeroplanes could undertake nothing but a reconnaissance and might not make a success of that in a real war. \* \* —The New York Sun.

## The Time Will Come

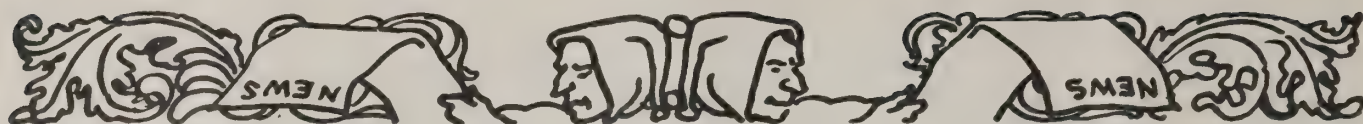
(New York Sun)

AS war is carried on today an aviator has no knapsack in which the baton of a Marshal of France can be carried, but consider the achievements of Adolphe Pegoud of loop the loop fame, told in an official despatch:

"On several occasions he has pursued enemy aeroplanes, and on February 2nd attacked at a great height and caused the fall of a German machine. Soon afterward he attacked two other aircraft, causing the first to fall and the second to land."

If the time ever comes when armies fight in the air, as well as on terra firma, a man of Pegoud's daring may expect to rise to the grades of General and Marshal.





### *American Aircraft Superior to Foreign, Says Russian*

While Europe has advanced in the manufacture and development of aeroplanes, the United States is distinctively in the lead in the manufacture of seaplanes, according to Lieutenant Gregor Piotrowski, of the imperial Russian navy, who arrived yesterday on the White Star steamship Adriatic.

Lieutenant Piotrowski added that American hydroaeroplanes have been adopted as the standard for use in the Russian navy, where they have been subjected to the most exhaustive of tests in competition with the leading European products. They have proved such a valuable adjunct to the navy, he said, that Russia has taken steps to increase largely the equipment of her aerial corps.

While Lieutenant Piotrowski would not give particular details in regard to his trip to this country, he admitted he would stay here several months inspecting aeroplane motors, and that possibly he would make some purchases in behalf of the Russian government. He first will go to Washington to confer with the Russian Ambassador, he said, and will endeavor to obtain permission to inspect the army and navy aeroplane schools.

The most interesting news received when the Adriatic reached Quarantine was the activity of the allied naval fleet in the Dardanelles, said Lieutenant Piotrowski. He expressed the opinion that the fleet will succeed in reaching Constantinople before the date set by the British Admiralty—Easter Sunday—and that the fall of the Turkish stronghold would mean the most important step toward the end of the conflict which has been made since the invasion of Belgium began.

It is in the Dardanelles operations, he said, that seaplanes have demonstrated their greatest value. He estimated that there are fully a score of the machines operating with the fleet and that if it were not for the work they are doing in unmasking the Turkish batteries, most of which are cleverly masked, the forcing of the Dardanelles would be an impossibility.

The fall of Constantinople, which was thought to be a physical impossibility by Germany, continued Lieutenant Piotrowski, will mean the release of millions of bushels of Russian grain, which now is loaded aboard steamships awaiting the entry of the Allied fleet. It also will afford ready access to the great Russian oil fields and thereby lay open a practically unlimited supply of fuel for the naval vessels.

### *Congressmen Fly in Army Aeroplanes*

United States Senator McCumber of the carnival affairs committee and Representatives Britton of Illinois and Gordon of Ohio of the House committees on naval and army affairs, respectively, made extensive aeroplane flights recently, at the army aviation station on North Island, San Diego. Army officers had charge of the aircraft. The flights were arranged to interest the members of Congress in the development of the aviation arm of the naval and military service in the United States.



**Another Sportsman Adopts the Flying Boat**  
Mr. Fleishman and Instructor Morris at San Diego, Cal. Mr. Fleishman is a well-known sportsman. He is becoming an expert aviator and expects to fly his own boat in the East this summer

### *San Diego Notes*

One of the finest flights made by a mechanic attached to the First Aero squadron of the United States army since the recent edict permitting enlisted men to pilot their own machines was that made recently by Sergeant P. Ocker. Flying in military speed scout No. 32, Ocker ascended to a height of 10,000 feet, remaining in the air an hour. Thousands of spectators throughout the city craned their necks to catch a glimpse of the aviator as he circled at this altitude over the harbor.

Ocker obtained his pilot's license a year ago in three of the most sensational flights ever seen at North Island. Thoroughly to test Ocker's control of the biplane which he was driving in the tests, Francis Wildman, then instructor at the Curtiss aviation school, placed a sheet of newspaper on the ground, anchoring it with rocks. Three consecutive times Ocker volplaned from a height of 1000 feet, planting the biplane squarely over the newspaper.

Lieut. Thomas DeWitt Milling, driving the Burgess-Dunne V-shaped, which differs materially from the standard type of military biplane, also plied the airplanes yesterday morning. He remained up half an hour.

### *Aeroplane Guns Installed on American Gunboat*

The first aeroplane guns installed on an American ship are being mounted on the United States gunboat Dubuque at the Portsmouth navy yard.

### *Hempstead Notes*

*By P. C. Millman.*

Kantner has been doing quite some flying, also carrying a few passengers and Heinrich has been flying every day carrying lots of passengers. Martin in the Aero-Marine made one flight during the week. Millman had the 100 Gnome Gallaudet tractor out several times, but did not make any long flights on account of motor trouble. The 90 Gyro Gallaudet will be ready soon.

On Saturday, March 20th, a party from the Aero Club of America, including several foreign representatives, visited the field and were treated to some fine flying by Heinrich, Kantner and Millman. Amongst those carried in the Huntington machine were Ralph Pulitzer, proprietor of the New York World, and D. L. Shoemaker, Assistant Secretary of the Automobile Club of America.

Several representatives of foreign governments made flights in the Heinrich and Huntington machines. The visitors were entertained by Allan R. Hawley and Henry Woodhouse. It is expected to make these week-end meets quite the popular rage this Summer.

### *Cicero Notes*

*By A. E. Nealy.*

The Partridge-Keller tractor school machine has been doing some good school work in the past few weeks.

\* \* \*

The Marble-Selleck Nieuport is now ready for its Spring tests and will be given the initial flights with Curtis Pritchard at the controls.

\* \* \*

The Partridge-Stinson loop-the-loop machine is now completed and ready for its acceptance trials.

\* \* \*

Mr. Art Smith, now champion loop-the-loopist of the world, who gave the thrilling exhibition in Grant Park a few weeks ago, has had his Curtiss type biplane shipped to Cicero Field for try-outs. He will soon have a duplicate machine constructed by the Partridge Company.

\* \* \*

The small, but efficient, twelve h. p. Laird tractor biplane which was a big attraction at Cicero last Summer is being set up for the coming season's activities. Mr. Laird will soon start the construction of a larger type machine for passenger-carrying and school work.

### *Webster Soars Over Duluth*

Exhaust from a powerful motor startled thousands of Duluthians into looking skyward when the city was treated to an exhibition flight by Harry Webster, local birdman recently. Using his exhibition type Curtiss biplane, the aviator made two flights,



## France

The latest reports of the official eye-witness attached to French headquarters gives an exhaustive account of how French air squadrons fitted with bomb dropping devices harass the communication lines of the German Western Army.

"During the night of Jan. 22-23 several bombs were thrown by a squadron on a German encampment near La Fere where they caused intense trouble. In spite of the lighting fuses followed by rifle fire of the enemy our aviators returned safely to their base.

"Since Jan. 26 our aeroplanes have constantly flown above German territory, in order to effect reconnaissances and bombardments of places of military importance. These raids have even taken place with foggy weather.

"Thus on Jan. 31 one of our airmen flew over a cloud bank and finding suddenly a clear sky bombarded the railway depot of Lutterbach. The same day another aviator flew above the German trenches at only 700 meters (2100 ft.) height.

"The same daring is shown in night raids. On Jan. 29 an aeroplane dropped four bombs on the General Staff's quarters at Ostende. Three days later we heard that three German officers had been killed by this raid. On Feb. 1 Ostende was bombarded again from a height of only 1100 metres (3,300 ft.).

Another report from Friedrichshafen says that work is being rushed there on airships to replace four recently lost and that there is some difficulty in finding capable pilots for the craft.

(The four airships referred to are probably the L-3, L-4, L-8 and the Z lost in the Adriatic. Germany had 40 dirigible pilots at the outbreak of the war. A.A.)

The German Flying Corps is now provided with a baby monoplane whose special features are great speed, quick climbing and handiness. The German flyers call it the "humming bird."

On the other hand the original Taube monoplanes as made by Etrich, Rumpler, Jeannin, etc., have been entirely discarded because they required too much space for going aloft. Their place has been taken by four makes which are now standard in the German Army: Albatros, Aviatik, D-F-W and L-V-G; with the exception of the Aviatik firm all the others build both monoplanes and biplanes, but the latter make up the greater part of the output.

According to reliable advice received from abroad the Aviatik firm is building a number of monster aeroplanes whose size exceeds by far that of the Sikorsky and of the America. They are reported to be fitted with four 200 h.p. motors (either Maybach or Mercedes) and fuel and oil tanks sufficient for a ten hours' flight, besides carrying 2,000 lbs. of explosives.

One of these machines is already in commission and is credited with an attempted raid upon London on Dec. 24, which was, however, prevented by the vigilance of British aeroplanes.

German seaplanes have been quite active lately, particularly in enforcing the "war zone" decree issued against the British Isles.

On Feb. 26, a seaplane cruising over the North Sea attacked with bombs the British steamer *Cordoba* as she was entering Yarmouth harbor. No damage was done.

On March 21, a seaplane dropped bombs on a Dutch and a British vessel, without hitting them.

"On Jan. 20 a night reconnaissance was made in the region of La Fere and Laon.

"As soon as the aeroplane's presence was signalled the lights went out, but one of our aviators descended to 500 metres height in order to locate the enemy's trenches and dropped eighteen bombs.

(This refers to the size of the French air bombs which have a diameter of 90 millimeters (3½ in.) and weigh 14 kilos. They contain 8 kilos of *mélinite* and are dropped by a device which is an improvement on that invented by Lieutenant Riley Scott, U. S. A.)

"Bombardments by aeroplanes at day-time proves just as effective.

"On Jan. 27, we shelled successfully a large body of troops north of Lille. On Jan. 30 four bombs were dropped upon German army headquarters at Hombourg, and eight upon the railway depot of Nonnenbruch. On Jan. 31, the railway depot of Pagny received six bombs; the following day fourteen bombs. On Feb. 1, we shelled the railway station of Lutterbach. The following day our air bombs destroyed an important electric power plant which furnishes the region of Mulhouse. On Feb. 5 the aviation hangars of Habsheim were paid a visit and bombarded.

"During the night of Feb. 8-9 an aviator flew over Ostende with six bombs and dropped one upon an ammunition depot, and the rest upon the German Headquarters.

"On Feb. 11, an aeroplane after having successfully fought off two aviators, shelled the railway depot of Bolwiller and an electric power plant at Nonnenbruch."

In spite of all measures of precaution taken two German airships succeeded in reaching Paris in the early morning of March 21 and dropped a number of bombs on the outskirts of the city. The official note issued describes the raid as follows:

"Between 1:15 and 3 o'clock this morning four Zeppelins started toward Paris from the direction of Compiègne, following the Valley of the Oise. Two were compelled to return before reaching Paris—one at Ecouen, (10 miles north of Paris), the other at Mantes, (on the Seine, 36 miles from Paris). The other two were attacked by anti-aircraft guns and only passed over outlying districts of the northwestern part of Paris and neighboring suburbs. They withdrew after having dropped a dozen bombs, some of which did not explode. The damage done was unimportant. Seven or eight persons were injured, but only one seriously.

"The different stations for anti-aircraft defense opened fire upon the Zeppelins, which were constantly kept illuminated by searchlights. One appeared to have been hit. The aeroplane squadron took part in the action, but mist hampered pursuit.

"Summing up, the Zeppelin raid on Paris was a complete failure. It only served to demonstrate how well the defensive arrangements work. The population was calm. On their way back the Zeppelins dropped a dozen incendiary or explosive bombs on Compiègne, doing only unimportant damage. Three bombs were dropped on Ribecourt and Dreslincourt, to the north of Compiègne, without result."

## Germany

"The destruction of a Zeppelin airship, L-8, in the vicinity of Tirlemont on March 11," says the *Matin's* Havre correspondent, "was the work of two French and two English aeroplanes. The statement that it fell during a storm is denied."

Nine members of the crew of forty-one aboard the aircraft are reported to have been found dead, while twenty-nine were so badly injured that they died the next day.

(The latter statement, *viz.* that the crew consisted of forty-one men, proves beyond doubt that the L-8 was one of the latest German airships of 27,000 cu. m. as we have pointed out in our preceding issue A. A.)

\* \* \*

Reports received in Geneva, Switzerland and apparently confirmed, state that a Zeppelin airship of the smaller type which was sent from Friedrichshafen to the Austrian naval base of Pola has been lost in the Adriatic with its crew.

(The expression—smaller type—might be construed as meaning the military Z type of 19,500 cu. m. A.A.)

## Italy

Since the Italo-Turkish war Italy has entirely reorganized her aviation corps, which consists presently of 150 aeroplanes of latest design and construction.

The standard army machines all belong to one of the following four makes: *Bleriot-SIT*, *Farman-Savoia*, *Nieuport-Macchi* and *Caproni*, which latter is a national make somewhat reminiscent of the old-time *Borel*.

The *Nieuport-Macchi* machine is of the parasol type and used for gun-spotting. Armored aeroplanes are besides in construction.

The squadron consists of ten machines out of which seven are kept on active service and three in reserve.

## Switzerland

The Swiss Flying Corps consists presently of about a dozen machines of three different makes, each having a different nationality. They are the French *Bleriot-Gnome* monoplane, the Austrian *Lohner-Daimler* arrow-biplane and the German *L-V-G Mercedes* biplane, whose designer is Mr. Schneider, a Swiss engineer formerly connected with the *Nieuport* company.

## Spain

Wilbur T. Gracey, U. S. Consul in Seville reports that with the outbreak of the European war the Spanish officers interested in the purchase of aeroplanes were obliged to seek other markets in which to purchase machines. After communication with various American firms, arrangements have been made with the *Sociedad General de Representaciones* (the representatives in Spain of the *Curtiss Aeroplane Co.*, of Hammondsport, N. Y.) for the purchase of six *Curtiss* biplanes, with *Curtiss* motors' O X of 100 horsepower, and six *hydroaeroplanes* of the same make and with the same motors.

Particulars of the development of the aerodrome at Seville cannot as yet be secured, but it is probable that the installation will be of a temporary and provisional nature and will be improved as is later deemed advisable. The address of the officer having charge of the work is on file in the Bureau of Foreign and Domestic Commerce and its branch offices.

This machine, a genuine Taube, was brought down by a French aviator some time ago and is now on exhibition in the courtyard of the Hotel des Invalides, under Napoleon the Great's shadow. We are indebted to Mr. Alan R. Hawley, President of the Aero Club of America, for this interesting picture. He received it from Mr. Beckwith Havens, who has been in France lately.







Aeronitis is a pleasant, and decidedly infectious ailment which makes its victims "flighty" mentally and physically. At times it has a pathologic, at times merely psychologic foundation. It already has affected thousands, it will get the rest of the world in time. The symptoms are different in each case and each victim has a different story to tell. When you get through with this column, you may be infected and may have a *different* story to tell. If so, your contribution will be welcomed by your fellow *aeronuts*.

Captain Thomas S. Baldwin, the unique and only Captain, should have been at the head of the first installment of "Aeronitis." He was afflicted with this pleasant ailment long before many of us were born.

\* \* \*

Since Katherine and Marjorie Stinson started their campaign to introduce flying to the school children of San Antonio, the mothers of the children have to keep a double watch on napkins, handkerchiefs, and other material suitable to make models and kites. "Aeronitis" got them!

\* \* \*

Uncle David, known to the outside world as Professor David Todd, the celebrated astronomer of Amherst, who was interested in aerial navigation long before many of us were born—even if he only looks forty years old—makes the hearts of the young men who gather around the Aero Club of America's round table glow by telling them reminiscences of pre-aviation days. The trials of the enthusiasts of ten to forty years ago make us realize the tremendous development that has taken place.



Chorus of Dogs: "What a lovely sausage!"

### Why the Gallaudet Tractor Was Eliminated

Representatives of one of the Allied countries were inspecting the fine array of tractors at the Hempstead Plains Aerodrome, Garden City, and were discussing the Gallaudet Tractor, and its remarkable characteristics when "Tex" Milman took it up. The visitors followed the action with interest until the plane passed over them at a height of 1,500 feet. Then the pigeon-shape became evident and the visitors smiled a weary smile and turned to look at the Huntington and Heinrich tractors.

"The — sky is no place for it," commented the leader. "Every anti-aircraft gun in the land would pop against it."

\* \* \*

The loss of Zeppelin L-8 turns out to be an invention of the enemy. Nothing worse happened to it than to collide with a Flanders tree after dark and he returned to Germany "to be completely overhauled." As time goes on the Zeppelin scare in England diminishes to a nurse's tale to overawe unruly children: "The Zeppelin will get you if you don't watch out."—*New York Sun*.

### She Flew While He Was Flying

(Special Despatch to the *New York Herald*)  
Chicago, Ill., Saturday.

"I fell for her," he murmured,  
"But I never will again;  
My collarbone was ruined,  
And it wrecked my aeroplane.

"I left a high position,  
Just as high as I could get!  
The bird had flown, however,  
And I haven't seen her yet."

And at that William H. Hill told Judge Walker in the Circuit Court to-day he wouldn't have minded so much if she hadn't put him to such a lot of inconvenience.

"I'm an aviator, Judge," he explained in an annoyed tone, "and my wife's actions discouraged me."

Once he said he got so out of patience with her that he forgot how to run his biplane, fell four thousand feet into the ocean and was "almost annihilated."

"Finally," he concluded, "in 1911, when I was exhibiting at an amusement park in Boston, I got back one morning and found that my wife had drawn \$50 of my salary, taken \$500 and a lot of jewelry I had given her, and gone away with my groom. Best groom I ever had, too."

After thinking it over for four years Hill decided to ask for a divorce. Judge Walker granted it.

\* \* \*

Charles F. Villard, the veteran pilot, who is Glenn L. Martin's right hand man at the Martin factory, Los Angeles, and who was one of those who was swindled by Lucien Kohn, known to aviation as Yves de Villiers, has taken an added satisfaction in life since learning de Villiers has been put behind the bars at Sing Sing.

\* \* \*

Is there anybody who is not building a military tractor with the hope of selling a thousand machines to either side of the warring nations? The constructors are perfectly neutral—they will sell to the first side that gives the order.



# MODEL NEWS

BY WALTER H. PHIPPS

## CLUBS

**THE AERO SCIENCE CLUB OF AMERICA**  
29 West 39th Street, New York City

**PHILADELPHIA MODEL AERO CLUB**  
2208 Brown Street, Philadelphia, Pa.

**PACIFIC NORTHWEST MODEL AERO CLUB**  
915 Ravenna Boulevard, Seattle, Wash.

**LONG ISLAND MODEL AERO CLUB**  
401 Grant Ave., Cypress Hills, L. I.

**BAY RIDGE MODEL CLUB**  
6730 Ridge Boulevard, Bay Ridge, Brooklyn

**SUMMIT MODEL AERO CLUB**  
26 Shady Side Ave., Summit, N. J.

**THE ILLINOIS MODEL AERO CLUB**  
Room 130, Auditorium Hotel, Chicago, Ill.

**MILWAUKEE MODEL AERO CLUB**  
402 Bradford Ave., Milwaukee, Wisc.

**CONCORD MODEL CLUB**  
c/o Edward P. Warner, Concord, Mass.

**AERO CLUB OF ST. LOUIS**  
Columbia Bldg., 8th & Locust Sts., St. Louis, Mo.

### Aero Science Club of America

At the meeting of March 20th, arrangements were completed for the holding of a speed contest, on April 18th, the prize to be competed for is a beautiful silver cup donated by Mr. A. Hart of the Aeronautical Society. The rules of the contest permit the flying of all types of models and under the same conditions as those of the previous speed contest which proved a great success. The contest will take place at the Van Cortlandt Park flying field in the afternoon and without doubt it will prove as equally successful as the one previous. This is an open contest for all model flyers and no fees will therefore be collected. Further information regarding this contest will appear in the issue of April 5th.

Arrangements are under way for an intercity contest to take place this summer. Definite information regarding this contest will appear in a later issue. Scientific models were discussed at the meeting and in the near future a contest will take place with this class of models. The annual meeting of the officers of the Aero Science Club of America will take place and all members are requested to be present. Non-members are also requested to be present.

### Illinois Model Aero Club

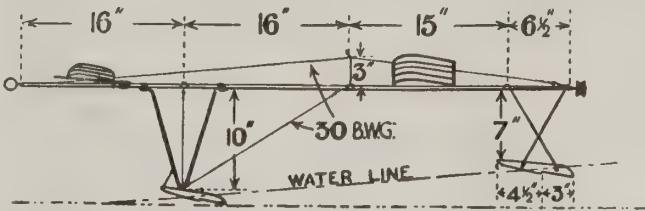
Wednesday, March 17th, a silver challenge cup offered by the Mozart school, was competed for in the school's gymnasium. The meet consisted in bomb-dropping contests and a free-for-all race. The latter was taken by Mr. Willis Hitt with a biplane model, and the bomb-dropping by Mr. Harry Wells with his tractor-plane. The judges awarded the cup to Mr. Hitt. Sixteen machines were entered in the competition.

Commencing Saturday, March 27th, a series of five distance and duration meets will be held at Cicero Field. The percentage system of averaging up flights will be used. At each meet, first, second and third prize badges will be awarded; the contestant who has the highest percentage at the end of the series will receive a silver cup. Dates for the contest are: March 27th, April 10th, April 24th, May 8th and May 22nd.

\* \* \*

The following description from British "Aeronautics" gives particulars of one of the champion English hydroaeroplane models. This model as will be noticed is much larger than the average American model was constructed by Mr. L. H. Slatter, a prominent English model flyer and is credited with a duration of 45 seconds. The following is a description of how it is constructed:—

The fuselage is composed of two main side-members of silver-spruce,  $\frac{1}{4}$  inch, by  $\frac{1}{4}$  inch, held apart by distance-pieces of split-bamboo. At the front end of



the fuselage the main members are bound together with strong thread and glued, the forward rubber hooks and protector (made from one piece of 18-gauge steel wire) being incorporated at the same time.

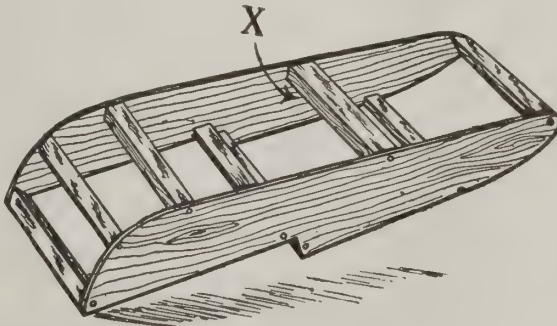
The other extremity of this framework is held  $12\frac{1}{2}$  inches apart by means of the rear distance strut. Three additional distance-pieces are fitted at intervals along the fuselage as shown. These struts are nicely stream-lined and are pinned in position with small veneer-nails, the joint then being bound over with glued silk ribbon.

The two propeller brackets are each made from a piece of brass  $1\frac{1}{4}$  inches long,  $\frac{1}{4}$  of an inch wide and about 1-16 inch thick. The pieces are bent to a right angle midway and then bound to the ends of the fuselage members. A small hole is now drilled in the projecting ends of the brackets to take the propeller shafts.

The main plane is of 54 inches span and has a uniform width of 6 inches. The camber is  $\frac{1}{4}$  of an inch at the centre of the plane and gradually reduces to  $\frac{1}{8}$  of an inch near the tips. The framework of this plane is constructed entirely of split bamboo, the leading edge and the end ribs being one long piece  $\frac{1}{4}$  inch wide by 1-16 of an inch thick. The trailing edge is a single piece of bamboo 50 inches in length, the ends of this spar being split into the ends of the outer ribs and bound with silk ribbon.

The remaining ribs are bent to give the requisite camber and then attached to the wing-spars.

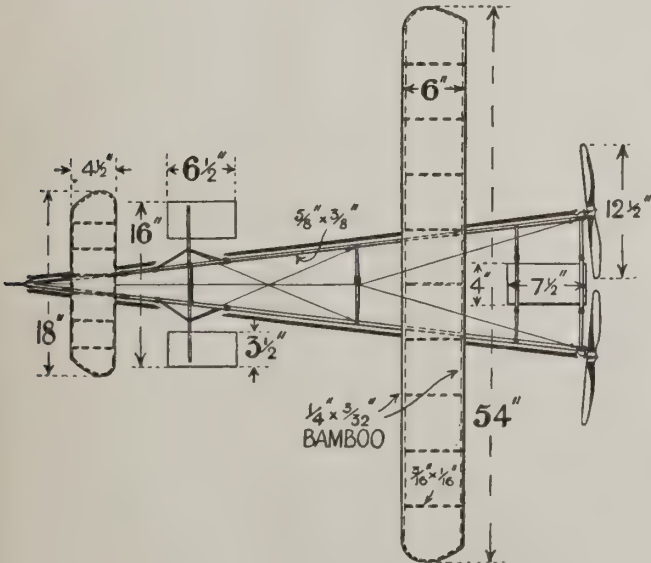
The elevator is also made of bamboo in a similar manner to the main plane, the maximum span being 18 inches and the width  $4\frac{1}{2}$  inches. The camber is  $\frac{1}{8}$  inch at the middle with a slight reduction towards the tips.



This elevator is mounted on two pieces of split-bamboo, 6 inches long, previously lashed at their rear ends to the top of fuselage, about 9 inches from the front. These pieces are bent upwards in front to give the required angle to the elevator, which is held in place with two rubber bands.

The main plane rests flat on the fuselage and is held in position by means of two 8-inch by  $\frac{1}{4}$ -inch by 1-16-inch pieces of bamboo. These are shaped to fit over the top of the plane and are secured to the fuselage with rubber bands. This method of attachment allows the main plane to be readily moved backwards and forwards to obtain the correct elevation.

The floats should now be made to the sizes given. The sides are cut from 1-16 inch birch or maple to the shape shown, care being taken to get the step in the correct position. Joining each end of the side-pieces is a piece of white wood, shaped to give a nice entry; the forward piece being round in front and the rear piece angular, so as to form a knife-edge section. Several other distance-struts are fitted as shown.





The floats are then covered with either a light silk or fibre paper and varnished with a good model aero varnish.

The front floats are joined together with a stout bamboo cross piece and then braced to the frame with 2 sets of V bamboo braces. The rear float is also attached with bamboo or wire braces.

The rear float is set a slightly less angle of incidence than the front ones. Every part of the model should be very carefully varnished, otherwise some of

the parts are likely to come adrift after one or two unpremeditated descents into the water. Varnish for the wood and the glued joints, but is too brittle for use on the float covering, which should be proofed with a flexible dope such as copal or "carriage" varnish.

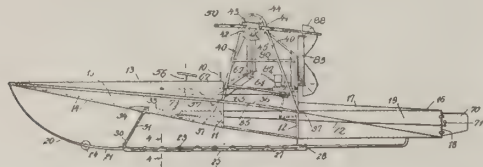
The propellers are 12½ inches in diameter with a pitch of 18 inches, and are carved from solid pieces of pine. The blades are glass papered to a thickness of 1-16 of an inch and French-polished.

## RECENT AERO PATENTS

BY WILLIAM N. MOORE

1,129,874. AEROPLANE. Marius C. Krarup, New York, N. Y. Filed July 30, 1910. Serial No. 574,662. (Cl. 244-14.)

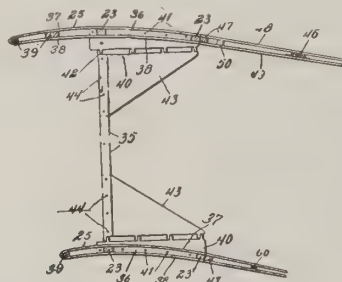
1. An aeroplane comprising a body portion, a covered frame projecting forwardly therefrom forming a prow with a pair of



under surfaces oblique to each other and to the direction of movement of the aeroplane; a covered frame projecting rearwardly from the body portion forming a tail with flat surfaces converging to two lines substantially at right-angles.

1,130,208. FLYING-MACHINE. Rexford M. Smith, Washington, D. C., assignor, by mesne assignments, to Connecticut Aircraft Company, New Haven, Conn., a Corporation. Filed Jan. 20, 1912. Serial No. 672,277. (Cl. 244-12.)

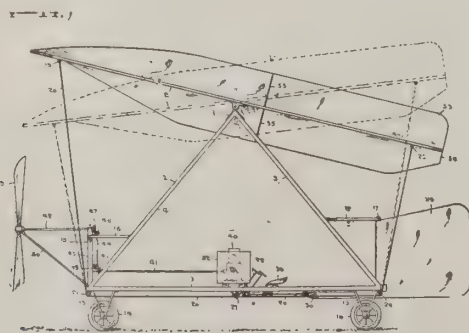
1. In a flying machine, a pair of superposed supporting surfaces extending lengthwise at right angles to the line of flight,



each of said surfaces having a lifting curvature and the upper surface being of greater dimensions than the lower surface and projecting marginally at all sides beyond the latter, the lifting curvature of the upper surface being constantly less than that of the lower surface, the arrangement of said surfaces being such as to bring their centers of pressure in a coinciding line.

1,130,125. AIRSHIP. William T. Wilkins, Shelley, Idaho. Filed Apr. 16, 1914. Serial No. 832,304. (Cl. 244-14.)

1. In a device of the character described, the combination with an operator's platform of triangular integral side members positioned on said platform and having their apexes in the vertical plane bisecting said platform, brackets located on said apexes, a rod rotatably mounted in said brackets, a movable aerofoil carried by said rod and controlling means for the adjustment of said

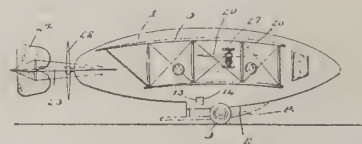


aerofoil including a transverse shaft carried beneath said platform, winding cones fixed to said shaft, a worm also carried by

said shaft, means for manually operating said worm, pulleys mounted upon the underside of said platform in longitudinal alignment with said winding cones and cables wound upon said cones, running over said pulleys and secured at their ends to said aerofoil to exert a vertical downward pull upon the latter when said shaft is manually operated.

1,130,623. FLYING-MACHINE. Matts Jacob Mustonen, Newberry, Mich. Filed Apr. 17, 1914. Serial No. 832,624. (Cl. 244-2.)

1. A flying machine including a body having a supporting and suitable steering gear, said body being partitioned to provide a pilot's compartment, buoying compartments and a bottom bal-



lasting compartment, a motor within the body, propelling means driven thereby, a pump for exhausting water from the ballasting compartment, means for driving said pump from the motor, lifting and stabilizing propellers, and means for driving the same from the motor.

1,131,300. PARACHUTE. Jozsef Vig, Witherbee, N. Y. Filed Dec. 15, 1914. Serial No. 877,353. (Cl. 244-21.)

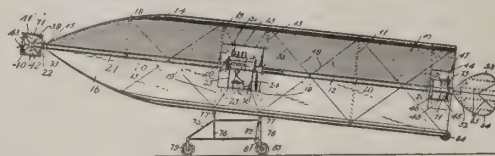
1. In a device of the character described the combination with a foldable parachute having a tubular staff provided with air



inlet ports immediately below the covering of the parachute, of an inflatable life saver adapted to be attached to the body of the aviator, and a tube connecting said hollow staff with said life saver.

1,131,380. AUTOMATIC - STABILIZING AEROPLANE. William Huebner and Otto Kunkel, Garfield, N. J. Filed June 6, 1913. Serial No. 772,061. (Cl. 244-29.)

1. The combination with elongated supporting planes extending radially from a common axis and a pivot rod longitudinally of said axis, said planes having openings adjacent to said rod, an operator's basket fixed to the rod and suspended within the area of said openings whereby the planes may swing laterally



with respect to the rod and basket, a motor supported on the rod, oppositely rotatable propellers driven from the motor and rotatably journaled on the rod at the forward and rear ends of the openings, elevators at the front and rear ends of the supporting planes, a rudder at the rear end of the rod, and means for tilting the elevators and flexing the rudder independently from the basket.



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Overland Park, Kansas

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"DUPLEX" and 9 Cylinder

110 H. P. "DUPLEX"

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TRACTOR BIPLANES *and*  
HYDRO - MONOPLANES

Aeroplanes de Luxe for Boating, Racing, Cross Country Flying



*A Gallaudet 100 H. P. Military Tractor flying with pilot's hands off the controls, proving remarkable inherent stability*

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Manufacturers of

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Machines of all Types

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## HEINRICH Armored Military Tractor

110 H. P. GYRO MOTOR



*Climb, First Trial, 1000 Feet Per Minute with Passenger*

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Automatically hold the head out of water when exhausted or unconscious. Lessens the shock of a fall or bad landing. Protect against moisture and spray.

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The "Universal Life Line" Life Saving Mattresses and Pillows for bunks. Motor-boat Life Preservers and Ring Buoys. Swimming Float for Swimmers and those learning to swim.

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The Special Gold Medal and Exposition Gold Medal were awarded these equipments at International Exposition of American Museum of Safety, Grand Central Palace, New York, Dec. 12th to 19th, 1914.

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"FLYING SCHOOL"

CONTRACTORS TO THE UNITED STATES AND OTHER GOVERNMENTS

A scientifically built machine of staunch construction and highest efficiency.  
Speed range 40 to 90 miles: gliding angle with dead motor, 10 to 1

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**A COMPANY**, with stock all paid in, and expansion provided for as fast as the growth of the industry shall warrant:

**A PERSONNEL**, of high character and talent; a picked man, chosen on the basis of experience, skill, enthusiasm and character, in each of the following branches—factory superintendence and pilot, designing and estimating, bookkeeping and purchasing, patents, metal working, wood working, wing covering and varnishing, assembling and motor adjusting:

**A FACTORY**, of concrete fireproof construction, at the Aviation Field, Garden City, N. Y., possessing great advantage by reason of the situation—directly at the largest aviation proving ground near New York City:

**A TOOL EQUIPMENT**, of the very latest and finest metal-working and wood-working machinery that can be bought in this country, each machine equipped with individual electric motor, doing away with the usual cumbersome shafting and belting; such equipment, with the above mentioned personnel, insuring accurate workmanship and the interchangeability of parts:

**VOUCHSAFE THE CLAIM**, that we are exceptionally prepared to accept and fulfill orders for all types of aircraft. We have not sought business first, around which to build our equipment. We have prepared first, and are now ready for any business which comes. We have designs completed and materials selected for the construction of machines, for the Army and Navy, for Mail Carrying, for Long Distance flying, and, for the American Sportsman, we have designed a luxurious pleasure craft, combining a high degree of safety, a high degree of comfort, and a very fair degree of efficiency.

When this company was formed on January 7th, this military scouting machine was scheduled to be ready for flight by March 20th, and this date was anticipated by more than a week—an unusual circumstance in aeronautics. The well known pilot, Harold Kantner, who is also the factory superintendent of this company, gave this machine its first trial on March 11th, immediately upon completion, in a wind velocity of 25 miles per hour. So successful was its performance that on March 13th a number of passengers were carried in fine flights in rapid succession. This was also a windy day. No changes were required, and the balance proved correct without alteration.

From its performance we believe that this 80 H. P. tractor represents a new achievement in efficiency.



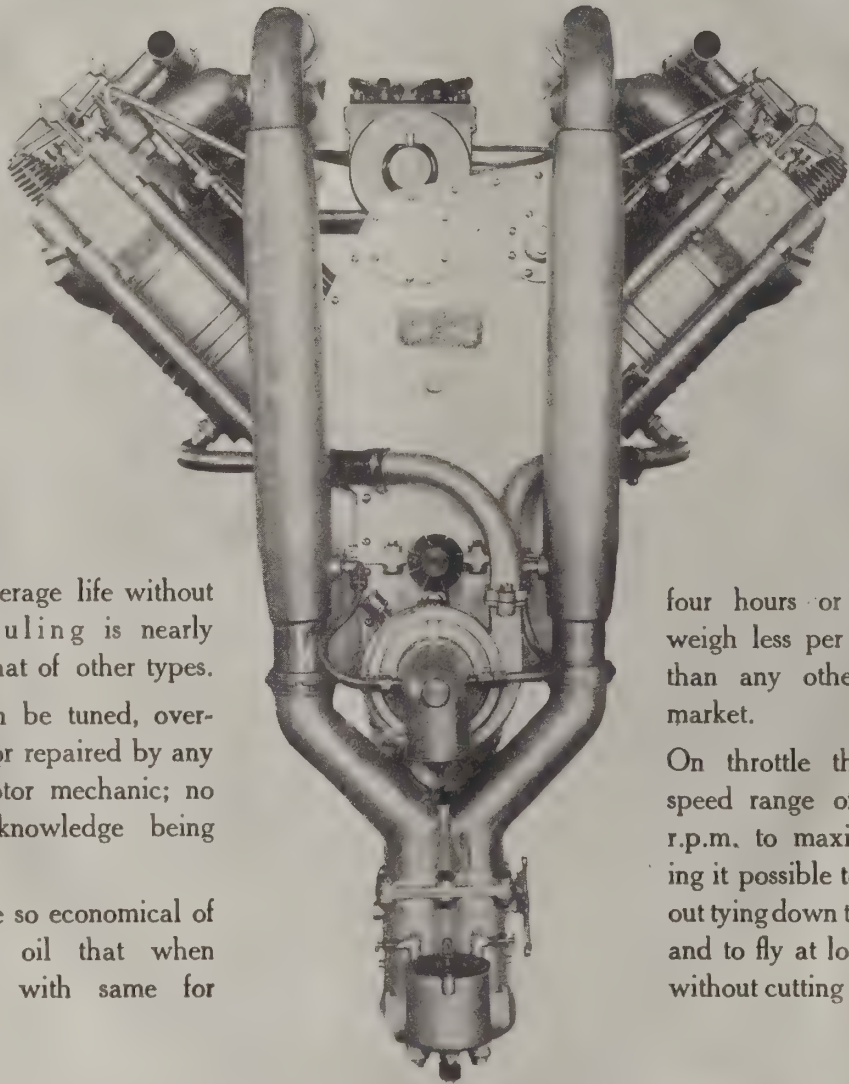
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18 East Forty-first St., New York City



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## OFFER THESE ADVANTAGES



Their average life without overhauling is nearly double that of other types.

They can be tuned, overhauled, or repaired by any good motor mechanic; no special knowledge being required.

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On throttle they have a speed range of from 200 r.p.m. to maximum, making it possible to start without tying down the machine, and to fly at lowest speeds without cutting out ignition.

### TWO STANDARD SIZES:

MODEL "O-X" 90-100 H. P.

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HAMMONDSPORT, N. Y.



629,105  
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THE CITY OF NEW YORK  
APR 1915

# AERIAL AGE

## WEEKLY

Vol. I. No. 3.

APRIL 5, 1915

10 CENTS A COPY



*One of the many American Aeroplanes now in use in the European War—  
A Curtiss flying boat undergoing reception tests at Brighton, England*



# Curtiss Flying Boat

*February Class—Curtiss Aviation School  
San Diego, California.*



THE Flying Boat in this picture has been in the air 500 hours, traveling 30,000 miles. In this boat hundreds of passengers have been carried and dozens of persons have learned to fly. There have been no accidents nor repairs. This machine is equipped with the newly developed and very efficient single-acting aileron system for lateral balance.

The Curtiss Flying Boat has made flying a safe sport.

**Military Aeroplanes of both Tractor  
and Pusher types for land and water**

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Are used on the highest grade military aeroplanes and flying boats made in America.

We use only the best materials obtainable and our workmanship is unsurpassed.

EVERY RADIATOR FULLY  
GUARANTEED

*Send Us Your Blue Prints—or  
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### Rome-Turney Radiator Co.

Makers of the famous "Helical Tube"  
Radiators for Trucks and Tractors

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*Our exceptional facilities enable us to make speedy deliveries*

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ENGINEERING DEPARTMENT

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## Tools and Equipments for Aeroplane Factories

*We are prepared to give expert advice on:—*

The Planning and Equipping of Factories

The Selection of Woodworking and  
Machine Tools best suited to particular  
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The most efficient methods of Manufacture

The Erection of Factories and installation  
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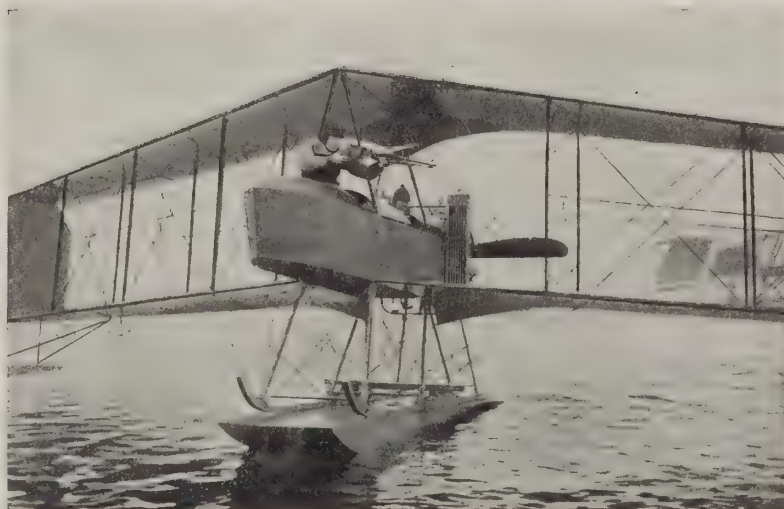
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Furnished to  
United States  
Canada and  
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Self-Balancing  
Self-Steering and  
Non-Capsizable

Form of wing gives  
an unprecedented arc  
of fire and range of  
observation.



Par excellence  
the weight &  
gun-carrying  
Aeroplane of  
the world.

Tail-less and  
Folding Enclosed  
Nacelle with  
Armored Cockpit

SPEED RANGE,  
40-80 miles per hour.  
CLIMB, 400 feet per  
minute.

*Burgess-Dunne convertible land and marine type as furnished the U. S. Army*

## THE BURGESS COMPANY

*Sole American Licensees under the Dunne Patents.*

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# Wright Aeroplanes

FOR SPORT, EXHIBITION OR MILITARY USE,  
OVER LAND OR WATER now embody the improve-  
ments that have been suggested by the experiments,  
conducted during the past ten years



*The New Wright Model "HS"*  
*MILITARY FLYER*

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## THE WRIGHT COMPANY

(The Wright Patents)

Dayton, Ohio

N. Y. Office, 11 Pine St.



## The Curtiss Trophy and \$5,000 Prize

GLENN H. Curtiss' offer of \$5,000 and a trophy, has been extended so that it becomes open to all aviators—civilians as well as military—who hold the Aero Club of America pilot certificates, according to a letter received by the Aero Club of America from Mr. Curtiss just as *Aerial Age* is going to press.

The original offer of Mr. Curtiss was for a trophy and \$5,000 in cash prizes for an annual competition to be held between Army and Navy aviators only. Owing to the present restricted conditions of Army and Navy aeronautics, it was not possible to take advantage of Mr. Curtiss' offer this year. Both the Army and Navy have to make their plans for the extension of their aeronautical organizations. Being short of personnel, they must tax the time and resources of every man experienced in aeronautics. At the same time they have to detach experienced

aviators to keep in Europe with the fighting forces to observe the work of air craft in the war. This makes it impossible for the experienced officers to participate in any contest.

Another obstacle was that while the Navy specializes in water flying, the Army only does it on a very small scale—and vice versa regarding land flying.

As the object of Mr. Curtiss in offering this trophy was to further the development of water and land flying in a competitive way, he promptly extended the offer to include all civilian aviators.

Mr. Curtiss' offer was accepted with enthusiasm by the officers of the Aero Club of America. The conditions of the contest will be considered at the next meeting of the Contest Committee which is to take place in a few days.

## To Establish Aeronautical Reserve for Navy

THE first steps towards organizing an Aeronautical Reserve for the Navy have been taken. Following is part of circular letter No. 68, sent by Commander F. B. Bassett, chief of the Militia Division of Naval Affairs, Washington, D. C., to all states having Naval Militia organizations requesting them to organize an aviation corps:

To: The Naval Militia Service.

Subject: Aeronautic Corps—establishment of.

1. This circular letter applies to all States having Naval Militia Organizations.

2. It is very desirable to establish an "Aeronautical Reserve" for the Navy, and it is recommended that each organization consider at once the possibility of establishing an "Aeronautic Corps." For the present the "Aeronautic Corps" of the Naval Militia will be confined to the use of Aeroplanes, although the establishment of Dirigible and Balloon divisions in the future should be collaterally considered.

3. The smallest tactical units for an aerial fleet are considered to be a section of two aeroplanes, with spares and appurtenances, and this fact should be considered in the formation of an "Aeronautic Corps."

4. The crew for each aeroplane will consist of two officers and six mechanics, and an additional officer should be in command of each section.

5. In establishing such an "Aeronautic Corps" it is believed that the first step should be to interest those officers and men who are already fliers, or who have had previous experience in aeronautics, and to enroll these members of the Naval Militia in the Aeronautic Service; also to enlist officers and men for this service who are experienced in handling aeroplanes.

6. The course of instruction and training in Aeronautics will be in general accordance with that prescribed for the regular Navy.

7. The Office of Naval Aeronautics, Navy Department, will co-operate in drawing up a course of instruction and training for any "Aeronautic Corps" that may be established as a part of any Naval Militia organization.

8. It is requested that this subject receive the earliest possible consideration, and that the Division of Naval Militia Affairs be informed of any steps taken, or that will be taken, towards the establishment of an "Aeronautic Corps."

This is a valuable innovation, certain to bring substantial results. It will utilize the resources of the score of aero clubs of the United States which are now lying idle in large part. The following excerpts from comments of Naval Militia officers, appearing in the press of different States, show that there is need for the co-operation of aero clubs and constructors and aviators to develop this important movement:

Lieut. H. J. Angley of the Naval Reserve Division in Watertown is anxiously combing the city to find someone who knows something about aviation. Lieut. Angley has a letter from the Navy Department asking if it would be possible to form a flying corps in connection with the Naval Reserve. The government offers to furnish two machines with officers and mechanics.

\* \* \*

G. F. Schwartz, commander of the Missouri Naval Reserves, has been ordered by the Navy Department at Washington to organize "aeronautic corps" in connection with the reserves. The commander has issued a request that all persons who have had experience as aviators or mechanics call at his office, 709 Laclede Gas Building, in reference to enlisting.

The smallest unit of such a corps will consist of two aeroplanes and of spare parts. The crew for each aeroplane will

consist of two officers and six mechanics, and an additional officer in command of the unit.

\* \* \*

Thomas T. Nelson, Jr., commander of the Naval Reserve force of Pennsylvania, regards the flying corps idea as still tentative so far as Philadelphia is concerned. "The plans are rather more for the purpose of gathering information upon the subject than actual service," he says. "Briefly, the outline for the Naval Militia of each State consists of a tactical unit of two aeroplanes, with a crew of two officers and six mechanics for each 'plane. The object is to interest those of the Naval Militia Service, and others, who have had experience as fliers, and to enlist officers and men for this service who are experienced in the handling of aeroplanes.

"Division A. and B., of the Pennsylvania Naval Militia, have no members of experience in this branch of the service, consequently plans to organize a flying corps are entirely tentative. While there are several obstacles, which may be easily removed, if the Navy Department formulates a plan of instruction and furnishes the 'plane, we may yet see the water division of the National Guard operating in the air. Sufficient number of officers and men have expressed their willingness to undertake the job.

"Balloon and dirigible divisions are also considered, and while no promise of assignment to these divisions can be held out to those of experience, nevertheless it might be well for them to consider the question of enlisting in the local divisions of the Naval Militia with end in view."

Additional impetus to the plans for the aviation corps was given at the recent meeting of the Aero Club of Pennsylvania and in order to crystallize the various plans the club's Executive Board determined to bring Antony Jannus, aviator, to this city some time in April. Jannus has been making successful air trips at St. Petersburg, Fla., during the winter. He will be invited to come to Philadelphia, it was said, as the guest of the Naval Reserves, to confer with them on the plans for a local station.

\* \* \*

Duluth has several young men who would learn to be aviators, and they have shown so much interest in the art of flying, that the Head of the Lakes will probably have an aviation corps, as a part of the naval militia, in the near future.

Commander Guy A. Eaton of the Minnesota naval militia recently received a letter from Commander F. B. Bassett of the militia division, department of naval affairs, urging the establishment of such a corps, and Capt. Eaton believes that it will be possible to have two heavier-than-air machines for the use of a Duluth corps soon.

"I have had five or six applications for a position in an aviation corps," said Capt. Eaton this morning, "as well as two or three from Minneapolis. At the start we would be able to accommodate only two officers and six men, so it looks as though we have enough 'recruits' to start with.

"It is planned to send as many men as will go, to the naval training school at Pensacola, where they will be fully instructed in the use of the aeroplane. After a course they will be returned to Duluth and given the appointment as officers should they qualify. As soon as we can show that we are able to handle the aeroplanes, the navy department will furnish us with a dirigible, and then we can add more men to the corps."

Officers of the navy, stationed at Washington, have started a campaign materially to increase the number of aeroplanes used by the U. S. navy. The European war has taught them a lesson, say experts, and they realize that there should be several hundred 'planes for use with the navy, instead of the twelve now enrolled as aids to the battleships.



## The Heinrich Military Tractor Biplane

By Walter H. Phipps



**A**NOTHER of the new 1915 crop of American machines which has proved very successful is the new military tractor constructed by the Heinrich Brothers and brought out and tested in record time.

As shown by the accompanying drawings and photographs this machine is of very pleasing and substantial design and entitled to a place well in the front rank of the world's leading aeroplanes.

The accompanying drawings and descriptions will reveal the many interesting characteristics of this exceptional flyer:

### Description

The Heinrich tractor has been designed to meet the severe requirements of a machine for military purposes where a machine is called upon to maintain the highest efficiency under the most trying and exacting conditions.

The seats are arranged in tandem for pilot and passenger with ample room allowed in front cockpit for two passengers if necessary. The controls are placed in duplicate for military work. With a 110 h.p. Gyro motor this machine has a speed range of from 45 to 80 m.p.h. Flying light it has a climbing speed of 800 feet per minute, and with a passenger and pilot and fuel for four hours it is expected to have a climbing speed of 4,000 feet in ten minutes, and a flying speed of 80 m.p.h.

### Motor

The motor fitted is a 9 cylinder, 110 h.p. Gyro rotary motor. The gasoline consumption is 10 gals. per hour, and the oil consumption is  $1\frac{1}{4}$  gals. castor oil. Weight of motor, 270 lbs. Weight with gasoline and oil for a four-hour run, 570 lbs.

### Wings

The wings are the latest approved construction, and are of the one-piece type. The wing sections are I beam with ash center and spruce struts, these are reinforced under the upright struts and where the cross-wires fasten inside the wing. The front and rear beams are also I-beam section with ash centers and spruce struts. The wing tips are laminated ash, 4-ply. The covering is Irish linen, unbleached, thoroughly coated with a special coating which preserves the linen and increases the strength 30 per cent., it is then coated with a special gray varnish. The wing span on upper plane is 35 feet and 28 feet on the lower plane. The total lifting area in main planes is 285 square feet.

### Fuselage

The fuselage is rectangular in section,  $40\frac{1}{2}$  inches wide by 33 inches deep in the front tapering to 12 inches wide by 2 inches deep at the rudder. The longerons are of ash  $1\frac{1}{2}$  inches square at the front tapering to inch at the rudder. The fuselage is corner braced with 7 sets of ash struts double channeled, and then cross wired, making a box-girder of the whole. The second and third struts are made extra large to take the extensions to the upper plane, the lower ends being slotted to take the lower plane beam ends. The top of the fuselage is stream-lined off from the back of the pilot's seat to the tail plane.

The stream-line effect is preserved by enclosing the motor under an aluminum hood allowing just the bottoms of the cylinders to project for cooling, slots are made in the hood on either side of the propeller allowing air to enter and circulate around the motor. The hood is carried back to the pilot's seat, carrying out the stream-line effect and protecting the pilot and passenger from the wind and shielding the dash-board upon which are mounted the instruments. The entire fuselage back of the passenger seat is covered with Irish linen and treated the same as the wings, forward of the seat the machine is covered with aluminum, and the entire machine when finished is painted a sky grey eliminating the visibility of the machine.

### Motor Installation

The rotary motor is mounted with both front and rear mountings. The struts taking the rear mounting being extra large and unchanneled, 2 inches by 3 inches, the front and rear mountings being of 3-32 inch reinforced steel. The motor is direct connected to an 8 feet by 6 feet propeller.

The gasoline and oil is fed to the motor from a gravity feed tank in front of the passenger seat, this tank holds 10 gals. castor oil and 15 gals. gas. The gasoline tank is further supplied by a combination pressure and hand feed pump system. The hand pump only being used in case the pressure feed fails. This gasoline is supplied from a 35 gal. tank under the passenger seat.

### Landing Chassis

The landing chassis is of the wheel and skid type, two struts of ash  $1\frac{1}{4}$  inches by 3 inches support the fuselage on either side and are fastened to the skid on the bottom by a 1-16 inch steel fastening. The skid is of laminated hickory, 5-ply,  $2\frac{1}{2}$  inches deep by 2 inches wide and 4 feet, 6 inches long, turned up in front and projecting far enough out to protect the propeller.

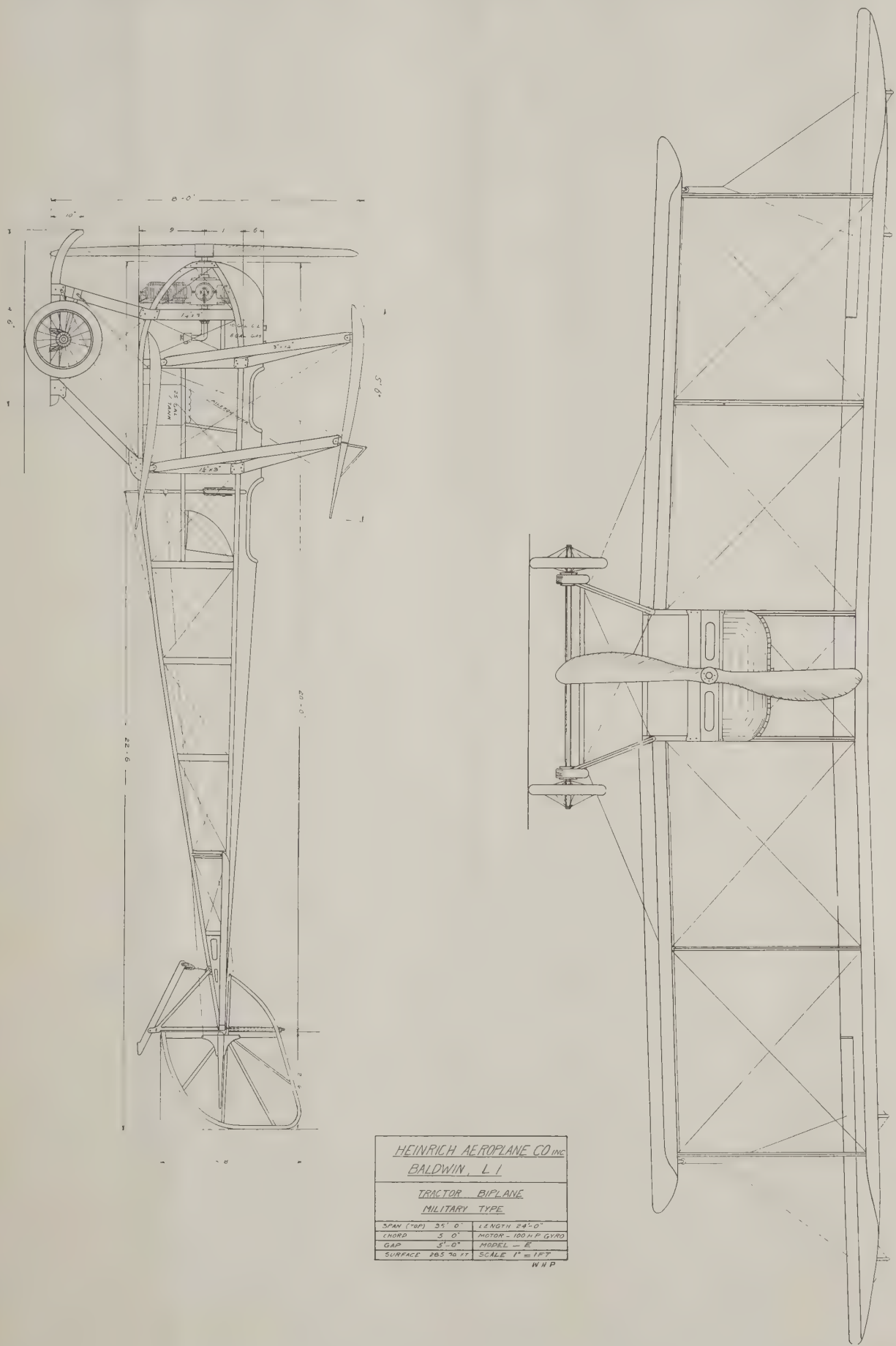
(Continued on page 68)



Three-quarter view of the Heinrich Military Tractor Biplane



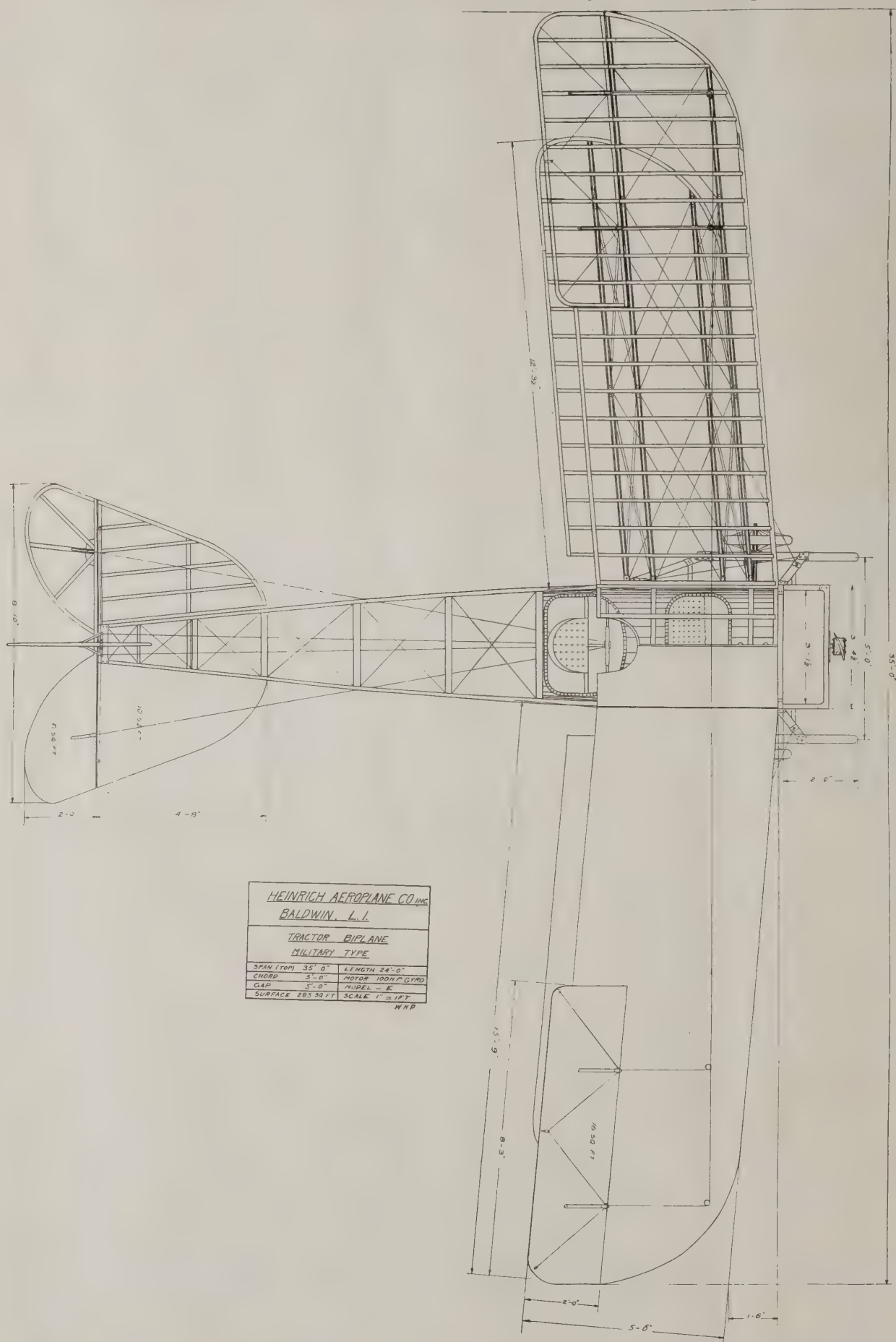
Front and Side View of the 110 h. p. Gyro-Motored Heinrich Tractor



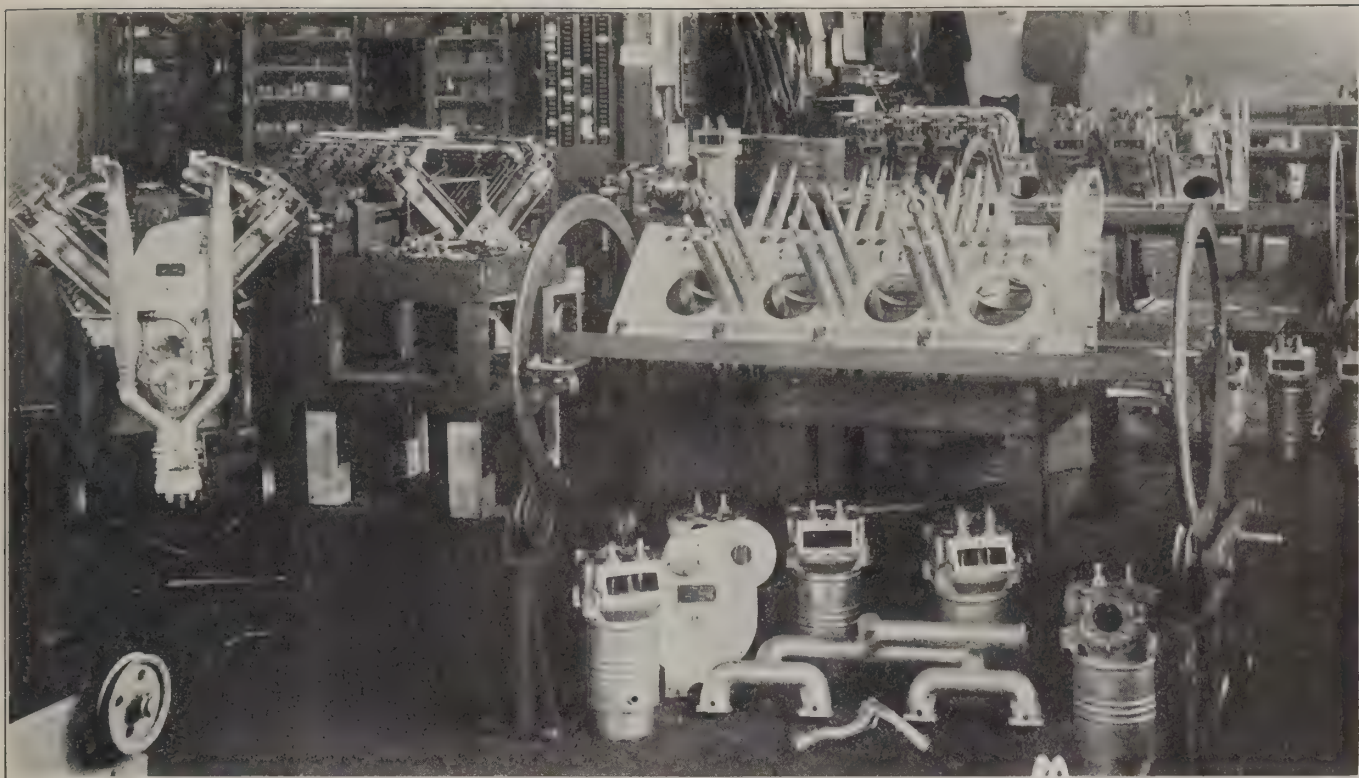
HEINRICH AEROPLANE CO INC	
BALDWIN, L I	
TRACTOR BIPLANE	
MILITARY TYPE	
SPAN (TOP) 35'-0"	LENGTH 24'-0"
CHORD 5'-0"	MOTOR - 100 H.P. GYRO
GAP 3'-0"	MODEL - E
SURFACE 265 sq ft	SCALE 1" = 1 FT
W H P	



Top Elevation of the Heinrich Military Tractor Biplane







*Motor Assembling Room In the Curtiss Plant At Buffalo*

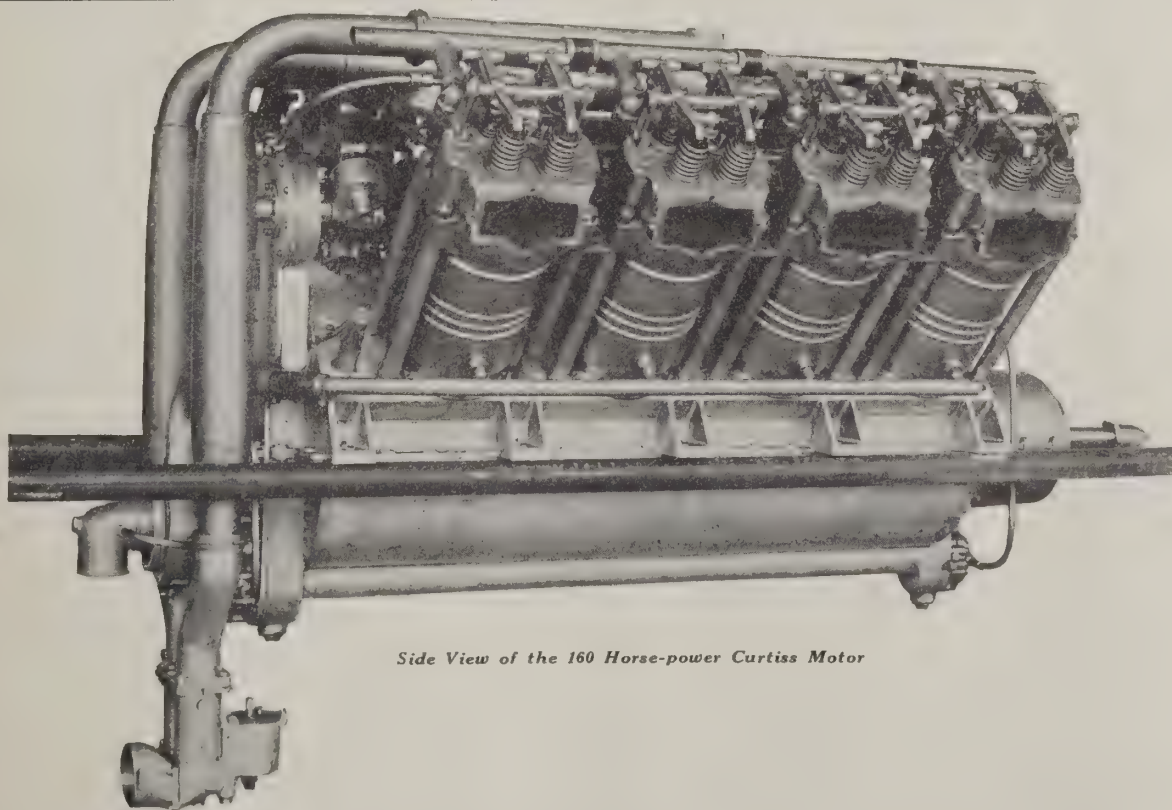
## Great Activity at the Curtiss Plant

Most of the large orders for aeroplanes for foreign countries require the 160 horsepower motor. Hence in this assembling room all the motors are of the 160 horsepower type. Other photographs received, and which are to be published in future numbers of *Aerial Age* show a score of flying-boat hulls of the two and four passenger type, such as are supplied to the navies of Russia, Great Britain, Italy, Spain and other countries. Other

machines are being turned out for the United States army and navy, which, when completed, will be shipped to the naval flying stations at Pensacola, Fla., and the army training camp at San Diego, Cal.

These photographs also show the other departments of the Buffalo factory—all being very busy.

The Curtiss plants together employ close to 1,000 men.



*Side View of the 160 Horse-power Curtiss Motor*



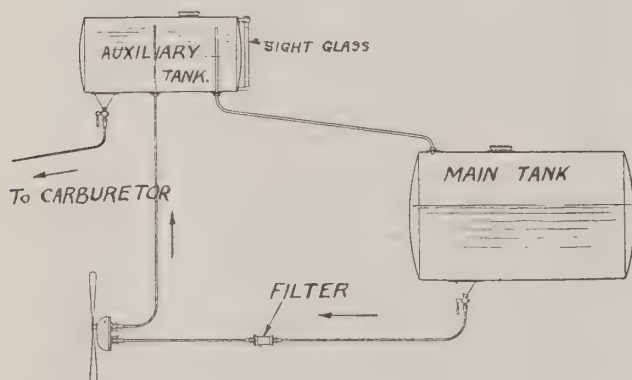
## Fuel Feed Systems

By N. MacCough

**T**HERE are many cases where it would be convenient if the fuel tank of an aeroplane or flying boat were located below the carburetor. This is particularly true where it is desirable to carry a large quantity of fuel, such as with the "America" on the proposed trans-Atlantic trip.

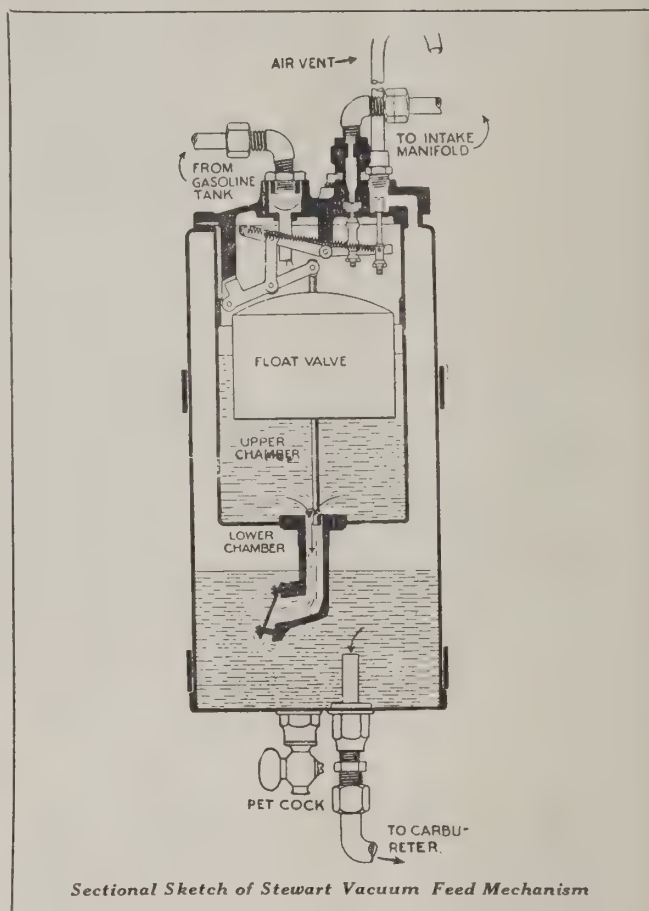
The usual way to get the fuel up to the carburetor when the tank is below it, is to make the fuel tank air tight and supply it with air at a moderate pressure by means of a hand pump. It takes a very little pressure to raise the fuel several feet above the tank. This system has been used for years on automobiles where the fuel tank was carried on the rear. The objections to its use are that it becomes inoperative if the filler cap on the tank is not screwed down so as to be air-tight. A broken pipe between the fuel tank and carburetor is a serious matter since the pressure in the tank will force the fuel out of the break with great rapidity. As the fuel is consumed by the engine, the pressure drops because of the expansion of the air which occupies a greater volume in the tank, and more air must be supplied. Some automobiles are equipped with a special device which automatically maintains the pressure, but for aeroplane work it is much simpler to use a hand pump, though it is a nuisance to the aviator.

Another system has been used abroad to accomplish the same results. It consists of a small auxiliary tank above the engine, supplied from the main tank by a gear pump driven by a small propeller which is rotated by the air while the machine is in flight. The pump supplies a greater quantity of fuel than necessary, and the overflow of the auxiliary tank runs back to the main tank.



During the last year a system known as the "vacuum feed" has become very popular in the automobile field, and has been adopted by about 20 per cent of the manufacturers. A small tank, shown herewith in section, is mounted above the engine, the fuel being drawn up from the main tank by means of the same "suction" which draws the fuel mixture into the cylinders from the carburetor. With the inner tank empty, the float will naturally fall. This pulls downward the left hand end of the toggle mechanism above, thereby pulling the coiled spring below the central pivot and drawing down the floating right hand member, which is pivoted at the same point as the left hand member. Thus the little vent valve is closed, and the valve to the intake manifold connection is opened.

With the valves in the positions described above, the suction of the inlet pipe causes a vacuum in the chamber, which closes the flap valve at the lower end of the passage communicating with the lower chamber and is sufficient to draw gasoline from



the main tank. The flow continues until the rising gasoline in the upper chamber has caused the float to rise, carrying the left hand end of the spring above the pivot point and pulling the floating right hand lever upward, thus closing the inlet manifold connection and opening the vent valve.

When the vent valve is opened gasoline will flow from the upper chamber to the lower, the rate of flow depending upon the level in the lower chamber. If this is nearly empty it will take but a moment for enough gasoline to flow to allow the float valve to drop sufficiently so that the positions of the valves are changed again, closing the vent and opening the intake manifold connection.

It should be noticed that the main tank must not be air tight, but should be provided with a small vent so that the pressure in the tank will be atmospheric.

The only time that the vacuum can become so low that it will not draw gasoline from the main tank is when the tank pressure is below 4 ounces, and this condition can exist only when the motor is running below 600 revolutions per minute with wide open throttle. In actual practice a motor is not operated under these conditions long enough to exhaust the supply of fuel in the tank.

If the motor is allowed to stand long enough so that the tank becomes empty it will be replenished after it has been cranked over four or five times with the throttle closed.

This vacuum feed, which is manufactured by the Stewart Warner Speedometer Corporation, should be of value to aeronautics. It has already proven exceedingly trustworthy on automobiles, and as it weighs only about 4.5 pounds, the added weight will be no handicap.

# WORLD RECORDS

## HOMOLOGATED BY INTERNATIONAL AERONAUTICAL FEDERATION

AVIATION				
SPEED—Closed Circuit without Alighting.				
Distance	Aviator	Country Holding Record	Date of Record	Time
Kiloms.				h. m. s.
5	J. VEDRINES	U. S.	9th Sept., 1912	0 1 43 2/5
10	M. PREVOST	France	29th Sept., 1913	0 2 56 3/5
20	M. PREVOST	France	29th Sept., 1913	0 5 54 1/5
30	M. PREVOST	France	29th Sept., 1913	0 8 52 1/5
40	M. PREVOST	France	29th Sept., 1913	0 11 50 1/5
50	M. PREVOST	France	29th Sept., 1913	0 14 48 1/5
100	M. PREVOST	France	29th Sept., 1913	0 29 40
150	M. PREVOST	France	29th Sept., 1913	0 44 38
200	M. PREVOST	France	29th Sept., 1913	0 59 45 3/5
250	J. VEDRINES	France	9th Jan., 1913	2 1 53 3/5
300	GOBIONI	Italy	28th Mar., 1912	2 49 0
350	GILBERT	France	30th Dec., 1912	3 26 16
400	GILBERT	France	30th Dec., 1912	3 55 27 3/5
450	GILBERT	France	30th Dec., 1912	4 24 44 4/5
500	GILBERT	France	30th Dec., 1912	4 54 6 1/5
600	GILBERT	France	30th Dec., 1912	5 52 38
700	FOURNY	France	11th Sept., 1912	9 31 1
800	FOURNY	France	11th Sept., 1912	10 44 45 4/5
900	FOURNY	France	11th Sept., 1912	11 59 9 3/5
1,000	FOURNY	France	11th Sept., 1912	13 1 12

### Aviator and 1 Passenger

5	H. BIER	Austria	1st Oct., 1912	0 2 58
10	G. LEGAGNEUX	France	20th July, 1912	0 4 24 4/5
20	G. LEGAGNEUX	France	20th July, 1912	0 8 51
30	G. LEGAGNEUX	France	20th July, 1912	0 13 18 3/5
40	G. LEGAGNEUX	France	20th July, 1912	0 17 44 4/5
50	G. LEGAGNEUX	France	20th July, 1912	0 23 13
100	G. LEGAGNEUX	France	20th July, 1912	0 34 36 3/5
150	G. LEGAGNEUX	France	20th July, 1912	1 7 10
200	E. RENAUX	France	9th June, 1914	1 53 40
250	E. RENAUX	France	9th June, 1914	2 21 56
300	E. RENAUX	France	9th June, 1914	2 50 28
350	E. RENAUX	France	9th June, 1914	3 18 44 1/5
400	E. RENAUX	France	9th June, 1914	3 47 17
450	E. RENAUX	France	9th June, 1914	4 15 29 2/5
500	E. RENAUX	France	9th June, 1914	4 43 16

### Aviator and 2 Passengers

5	CH. NIEUPORT	Austria	30th June, 1912	0 2 52
10	CH. NIEUPORT	Austria	30th June, 1912	0 5 45
20	ED. NIEUPORT	France	9th Mar., 1911	0 11 59 3/5
30	ED. NIEUPORT	France	9th Mar., 1911	0 17 52 3/5
40	ED. NIEUPORT	France	9th Mar., 1911	0 22 44 2/5
50	ED. NIEUPORT	France	9th Mar., 1911	0 29 37 2/5
100	ED. NIEUPORT	France	9th Mar., 1911	0 59 8

Distance	Aviator	Country Holding Record	Date of Record	Time
Kiloms.				h. m. s.

### Aviator and 3 Passengers

5	P. MENDELLI	Austria	16th Aug., 1912	0 3 48
10	G. BUSSON	France	10th Mar., 1911	0 6 16
20	P. MENDELLI	Austria	16th Aug., 1912	0 12 3
30	P. MENDELLI	Austria	16th Aug., 1912	0 17 37
40	P. MENDELLI	Austria	16th Aug., 1912	0 23 11
50	P. MENDELLI	Austria	16th Aug., 1912	0 29 47
100	P. MENDELLI	Austria	16th Aug., 1912	0 56 33

### Aviator and 4 Passengers

5	G. BUSSON	France	10th Mar., 1911	0 3 34
10	GARAIX	France	10th June, 1914	0 5 27 2/5
20	GARAIX	France	10th June, 1914	0 11 0 1/5
30	GARAIX	France	10th June, 1914	0 16 32 3/5
40	GARAIX	France	10th June, 1914	0 22 14 1/5
50	GARAIX	France	10th June, 1914	0 27 32 4/5
100	GARAIX	France	10th June, 1914	0 55 12 4/5
150	CHAMPEL	France	15th April, 1913	1 49 11 4/5
200	CHAMPEL	France	15th April, 1913	2 25 2 1/5
250	CHAMPEL	France	15th April, 1913	3 1 17

### Aviator and 5 Passengers

10	GARAIX	France	10th June, 1914	0 5 32 2/5
20	GARAIX	France	10th June, 1914	0 11 5 2/5
30	GARAIX	France	10th June, 1914	0 16 39 2/5
40	GARAIX	France	10th June, 1914	0 22 14
50	GARAIX	France	10th June, 1914	0 27 47 2/5
100	GARAIX	France	10th June, 1914	0 56 20 1/5
150	GARAIX	France	10th June, 1914	1 24 11 1/5

### Aviator and 6 Passengers

10	GARAIX	France	22nd April, 1914	0 5 35
20	GARAIX	France	22nd April, 1914	0 11 12 1/5
30	GARAIX	France	22nd April, 1914	0 16 48 4/5
40	GARAIX	France	22nd April, 1914	0 22 28 1/5
50	GARAIX	France	22nd April, 1914	0 28 5 2/5
100	GARAIX	France	22nd April, 1914	0 56 44

### GREATEST SPEED—Closed Circuit without Alighting

Aviator	Country Holding Record	Date of Record	Speed per Hour in Flight of 5 Kiloms.
Aviator only			
M. PREVOST	France	29th Sept., 1913	203.850
G. LEGAGNEUX	France	20th July, 1912	135.952
E. NIEUPORT	France	20th July, 1912	102.855
P. MENDELLI	Austria	16th Aug., 1912	106.029
GARAIX	France	10th June, 1914	109.956
GARAIX	France	10th June, 1914	108.303
GARAIX	France	22nd April, 1914	107.642

DISTANCE—Closed Circuit without Alighting				
Aviator	Country Holding Record	Date of Record	Distance Covered	kiloms.
Aviator only				
A. SEGUIN	France	13th Oct., 1913	1,021.200	
E. RENAUX	France	9th June, 1914	500	
H. BIER	Austria	1st Oct., 1912	112	
MENDELLI	Austria	16th Aug., 1912	110	
CHAMPEL	France	15th April, 1913	250	
GARAIX	France	10th June, 1914	150	
GARAIX	France	22nd April, 1914	110	
DISTANCE—In a Straight Line without Alighting				
DEROYE	Italy	17th July, 1913	784	
GARAIX	France	22nd April, 1914	110	

TIME—Closed Circuit without Alighting				
Time	Aviator	Country Holding Record	Date of Record	Distance covered
hours				kiloms.
1/4	M. PREVOST	France	29th Sept., 1913	50
1/2	M. PREVOST	France	29th Sept., 1913	100
1	M. PREVOST	France	29th Sept., 1913	200
2	J. VEDRINES	France	9th Jan., 1913	246.937
3	M. TABUTEAU	France	24th Jan., 1912	310.281
4	GILBERT	France	30th Dec., 1912	401.900
5	GILBERT	France	30th Dec., 1912	510
6	BOURNIQUE	France	31st Dec., 1910	490
7	M. TABUTEAU	France	30th Dec., 1910	522 9'5
8	FOURNY	France	11th Sept., 1912	585.200
9	FOURNY	France	11th Sept., 1912	661.200
10	FOURNY	France	11th Sept., 1912	744.800
11	FOURNY	France	11th Sept., 1912	820.800
12	FOURNY	France	11th Sept., 1912	904.400
13	FOURNY	France	11th Sept., 1912	980.400
Aviator and 1 Passenger				
1/4	G. LEGAGNEUX	France	5th July, 1912	31.020
1/2	G. LEGAGNEUX	France	5th July, 1912	66.639
1	G. LEGAGNEUX	France	5th July, 1912	133.469
2	E. RENAUX	France	9th June, 1914	211.620
3	E. RENAUX	France	9th June, 1914	316.228
4	E. RENAUX	France	9th June, 1914	422.128
Aviator and 3 Passengers				
1	P. MENDELLI	Austria	16th Aug., 1912	106.029
Aviator and 4 Passengers				
1/4	GARAIX	France	10th June, 1914	26.580
1/2	GARAIX	France	10th June, 1914	53.141
1	GARAIX	France	10th June, 1914	107.580
2	CHAMPEL	France	15th April, 1913	164
3	CHAMPEL	France	15th April, 1913	247.303
Aviator and 6 Passengers				
1/4	GARAIX	France	22nd April, 1914	20
1/2	GARAIX	France	22nd April, 1914	50
1	GARAIX	France	22nd April, 1914	104.141

### DURATION—Closed Circuit without Alighting

Aviator	Country Holding Record	Date of Record	Time
Aviator only			
W. LANDMANN	Germany	26-27th June, 1914	21 48 45
Aviator and 1 Passenger			
GAUBERT	France	30th Aug., 1913	6 42 49 3/5
Aviator and 2 Passengers			
SHIRRMMEISTER	Germany	12th Nov., 1913	6 16 30
Aviator and 3 Passengers			
GARAIX	France	2nd July, 1914	4 3 39 4/5
Aviator and 4 Passengers			
CHAMPEL	France	15th April, 1913	3 1 17
Aviator and 5 Passengers			
GARAIX	France	10th June, 1914	1 24 11 1/5
Aviator and 6 Passengers			
GARAIX	France	22nd April, 1914	1 2 25 3/5
Aviator and 7 Passengers			
L. NOEL	Great Britain	22nd April, 1913	0 17 25 2/5
Aviator and 8 Passengers			
FRANTZ	France	2nd Mar., 1913	0 11 28 2/5
Aviator and 9 Passengers			
L. NOEL	Great Britain	2nd Oct., 1913	0 19 47

### ALTITUDE

Aviator	Country Holding Record	Date of Record	Altitude in metres.
Aviator only			
G. LEGAGNEUX	France	28th Dec., 1913	6,120
H. BIER	Austria	27th June, 1914	6,170
H. BIER	Austria	28th June, 1914	5,440
E. v. LOSSE	Austria	27th June, 1914	4,770
GARAIX	France	25th Feb., 1914	3,050
GARAIX	France	4th Feb., 1914	2,230
GARAIX	France	31st Jan., 1914	1,750
GARAIX	France	17th Mar., 1914	1,600
GARAIX	France	28th Mar., 1914	1,530
GARAIX	France	30th Mar., 1914	1,590
SYKORSKY	Russia	25th April, 1914	300



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SUBSCRIPTION RATES:  
Domestic, \$4.00 per year  
Foreign, \$5.00

ADVERTISING RATES:  
One page \$80.00, Half \$45.00,  
Quarter \$25.00, Eighth \$14.00,  
Sixteenth \$8.00.

Discounts: for 13 consecutive inser-  
tions, 10%; for 26 consecutive inser-  
tions, 15%; for 52 consecutive inser-  
tions, 17%.  
Cash discount, 3%, 10 days.  
For other rates see Classified  
Department.

PUBLISHED WEEKLY BY THE AERIAL AGE COMPANY, Inc., 116 West 32nd Street, New York City  
Entered as Second-Class Matter March 25, 1915, at the Post Office at New York, N. Y., under the Act of March 3, 1879

VOL. I.

NEW YORK, APRIL 5, 1915

No. 3

## The Navy Department not in Favor of Constructing Own Machines

"... **T**HE Navy Department has been busy making an estimate of the cost of establishing a government plant for the construction of air craft of various kinds. **Officials of the navy do not favor having the government engage in this kind of work,** but they say they will be glad to lend any possible aid, if Congress decides to make the venture."

"There are at present in this country several companies that can be rated as competent designers and builders, and the number is said to be large enough for proper competition, provided the government will give encouragement in the way of purchases and prizes. There are other American companies, it is said, that are only waiting the coming of sufficient business to develop their plants to large capacity. But at the head of all this activity the government, as the chief and perhaps almost the only purchaser of the flying craft, must place itself if there is to be satisfactory progress. This matter was all gone over during the recent session of Congress, and it is likely that the appropriation for new craft would have been considerably larger than it was but for the depleted state of the federal revenues. **This depletion has caused Congress to turn with an inquiring eye in the direction of government manufacture. As a permanent arrangement, however, it is claimed by naval officers, it will be far better to have this work done by outsiders.**"

The above, from a Washington report to the *Christian Science Monitor*, which seems to be the result of an interview with Representative William S. Vare, the Congressman who has proposed government construction of air craft throws light on the situation. The first paragraph gives the attitude of the Navy Department as being against engaging in the construction of air craft, the Department as a whole being undoubtedly of the same opinion as the Bureau of Construction and Repair and Bureau of Steam Engineering, which, as reported in the March 22d number of *AERIAL AGE*, have strongly advised against engaging in the construction of air craft.

The second paragraph shows that the proposal was made under the mistaken impression that aeroplanes can be constructed at less than the price charged by the constructors. The cause of the mistake is obvious. It is due to lack of detailed information regarding (1) what it would cost to the Navy to construct aeroplanes capable of meeting the conditions of the Navy hydroplane competition; (2) misinterpretation of the last paragraph of the report of the Bureau of Construction and Repair and Bureau of Steam Engineering; (3) failure to add the cost of the motor to the estimate of the cost of the aeroplane.

When the report was made, last December, the Navy's requirements were normal and the price of naval machines ranged between \$7,500 to \$11,000. Between \$3,500 and \$5,000 represents the cost of the motor. The report of the Bureau of Construction and Repair and Bureau of Steam Engineering says: "The estimated cost of turning out such machines under the present navy-yard cost system is about \$6,000. **This does not include the cost of the commissioned personnel, classified employees, leave, holiday, and disability, and certain other overhead charges not at present included in the cost of work,** and does not include the question of patent rights; all of these would probably run the actual cost much above the above figures." Adding the price of the motor we find that aeroplanes constructed by the Navy would cost more than they can be bought for in the open market.

It appears that Congressman Vare did not know these conditions and when he saw the figures of the bids in the recent Navy Hydroaeroplane Competition he, not knowing of the increased severity of the requirements, which naturally increased the cost of construction and requires a larger and costlier motor, mistakenly deducted that the prices were higher, than the cost of constructing by the government.

But the possible loss involved in the difference between the cost of constructing in a government plant and buying in the open market is insignificant compared with the loss involved in having the meagre resources of the Navy invested in experimentation. In the words of the report of the Bureau of Construction and Repair and Bureau of Steam Engineering: "**While the Government has resources, including a few officers specially trained in aeronautical-design work, this force can at present be considered as only a nucleus and is capable of carrying on only a very limited volume of work. It would be a tremendous loss to the advancement of aeronautical work to lose the ideas and results of private invention and experiment.**"

"3. In view of the above and in view of the extremely hazardous nature of air-craft work, involving the loss of life and property, if not designed and manufactured with extreme care and along what experience has taught to be the safest lines, the bureaus believe that it would be a great mistake for the department to undertake at the present time a manufacture of air craft except on an experimental scale."

## Darius Green's Philosophy

**S**OME aviators spend much of their time in figuring out how to do wild stunts in the air—but don't even give a thought to the possible results of their wild stunts.

It may be spectacular, and of some value to the "movies" to be shot up as a human cartridge with nothing to compensate the laws of gravity except a parachute, which may not open on time; or to make a dangerous dive, or go out in the night to loop the loop and shoot off fireworks; but sooner or later the result is a

"\* \* \* Whirl of tangled strings,  
Broken braces and broken springs,  
Broken tail and broken wings,  
Shooting-stars and various things!"

Then the aviator—or his relatives—moan with regret, as Darius Green did:

"\* \* \* The ain't sich a thunderin' sight  
O' fun in't when you come to light."

As few survive to be cured, we must insist on prevention as the only cure.

## Noah's Ark and the Royal Ark

**T**HE bombardment of the Dardanelles has brought to the fore the *Ark Royal*, the British Navy's new aeroplane carrier.

Many an aeronaut whose omniscience will unfailingly tell you why a helicopter won't fly and still be the best stock selling proposition, has wondered about that quaint name, trying to explain it to fellow-armchair aviators. We have found the reason. Here is why. According to the *Daily Telegraph*:

This ship is the base of the aerial intelligence service of the squadron to which she may be attached from time to time. When Noah had survived the flood, "he sent forth a dove from him to see if the waters were abated from the face of the earth."



At last the dove brought back an olive leaf, and Noah knew that all was well. The modern Ark carries seaplanes—or what the Germans call Taubes or doves. She sends them forth over the waters to see what the enemy is doing; they do not bring back olive leaves, but by means of wireless telegraphy they signal their intelligence. Moreover, they carry guns to defend themselves from an attack by an aerial enemy—all of which goes to show how far we have travelled since the time of the Flood.

### The Printer's Devil's Prerogative

THE Printer's Devil begs to state herewith that he is responsible for all omissions and mistakes appearing in AERIAL AGE. Being very young and supported by his family, he does not depend on his salary, therefore he is quite independent and is very much apt to take liberties with things that come his way.

For instance, he took great pleasure to mix up the Foreign News last issue, so as to put the Germans in the French trenches. Possibly nobody else noticed it, but he got some satisfaction in mixing the elements and creating a situation which, Mr. L. d'Orcy states, could not happen at the seat of war. He also took advantage of the absence of the Editors to omit a note regarding the American records from the last number, therefore, leaving out the remarkable records of Lieut. Byron Q. Jones.

This is not intended as an apology. It is a definition of status, intended to show the tremendous importance of the Printer's Devil. The Printer's Devil's prerogative is unlimited. Like the celebrated old Oxford don the Printer's Devil can say:

"Whatever is known I know it,  
And what I don't know isn't knowledge."

### Tribute to Beachey

THE editors of our monthly contemporary *Flying* being unable to include the following tribute to Beachey from an admirer in the April number of *Flying*, owing to lack of space, have asked for the privilege of using the columns of AERIAL AGE, which we grant with pleasure.

Sir:  
A terrible misfortune has befallen the science of aeronautics. With the death of Lincoln Beachey there has ended an epoch in the history of aviation—an epoch of almost supernatural accomplishment and a period of achievement that may be well compared with the first voyage of Columbus.

The unknown, the unseen and the impossible were mere words expressing only annoying and temporary obstacles before the realization of such ambitions as fill the soul of such men.

The greatest of aviators has passed to his eternal reward. The hand of death has reached out and grasped its victim all too soon.

Too often have the careers of great men been brought to an end by an unkind fate before the fulfillment of their ambitions.

Much have we seen and marveled thereat, but still greater things were promised.

Others may come forward to take his place, to follow in the path that he has blazed but to Beachey belongs the glory of first achievement—the honor and memory that should rightfully be given to the pioneer in every line of human endeavor.

Few men have been blessed with the wonderful courage and determination necessary to successfully realize what this more-than-bird man has done.

Many unthinking persons looked upon him as foolhardy and absurdly reckless but those who have known him and have watched his rise to fame know better.

That he carried out faithfully every promise, often in the face of scientific denial and the known laws of gravity, proves beyond all doubt that his feats were the result of careful calculation and a knowledge of aerial flight such as no other man possessed.

The master is gone but the fruits of his knowledge will come with future generations and a complete subjection of the air will truly become the most marvelous accomplishment of mankind.

Requiesat in Pace, Lincoln Beachey, the people of a great nation mourn your loss and will not forget.

Do whatever you please with this. I've got simply to unburden myself to some one who, I hope, will understand. Though Beachey never knew me, by name at least, I have known him since the days of his partnership with Knabenshue and a much patched and unruly dirigible—therefore feel a rather personal bereavement. I, also, know the irresistible fascination of aerial navigation—though I am nobody of any particular importance.

H. A. W.

A Sorrowing Admirer.

### Aircraft on the Battle Line

FROM the "recent notes by an eyewitness," with the British General Headquarters in France, which, by the way, are admirable instances of lucid writing, we quote the following: "There are, generally speaking, two kinds of reconnaissance, whether executed by aviators or cavalry—tactical and strategical. It is difficult to draw a hard and fast line between them, or to define exactly where one begins and the other ends; but the former may be said to be undertaken exclusively for the purpose of ascertaining the strength and disposition of the enemy in a strictly limited area along the battle front, by locating and examining his trenches, gun emplacements, headquarters, reserves, supply parks, and rail-heads. Its sphere ceases at a comparatively short distance in the front of the opposing forces. All that is going on in the area far behind the enemy's line comes within the sphere of strategical reconnaissance."—*Scientific American*.

### Aviation Advance

Editorial, Erie, Pa., *Disptach*

THE advance in aviation is becoming more and more apparent as the activities of the war extend. The appropriation of \$1,000,000 in our last naval bill shows that we are becoming awake to the necessity of the development of flying craft. Though an American was the first to make a successful aeroplane, yet we have lagged far behind leading European countries in perfecting this proved adjunct of war.

Aeroplanes can be carried on battleships and launched from their decks, so they are especially valuable to the navy. They are now being used with good results to direct the fire of the allies' warships on the Turkish forts in the Dardanelles and they are even of service in detecting the presence of submarines when the latter are submerged. For offensive operations all kinds of air craft thus far invented are of little value, except for scouting purposes and directing the fire of gunners.

There is, however, a still greater and better use to which our knowledge and experience in aviation will be put when warring nations return to peace. Its commercial and industrial possibilities are boundless. Especially will it become useful in the carrying of mails and possibly parcels post. Whether it will attain to practical passenger transportation remains to be seen. But aviation has long since passed the stage of failure and every advance makes it more and more a success of modern science.

### Infringing Patents Are Often Valid

(*Scientific American*)

WE are constantly asked by patentees why the Patent Office gives them a patent which infringes another and earlier patent, and they believe that in giving them a patent under such conditions, for an invention which they find they cannot make, use and sell, the Patent Office has given them an invalid patent, or as they generally put it, "a patent that is no good." They do not seem to understand that their own patent may be good and valid even though it does infringe a previous patent, and they cannot either make, use, or sell that for which the patent was granted them.

This matter would be clear if patentees understood the law under which patents are granted and the rights which are conferred upon them by the patent when granted.

The law requires that a patent shall be granted for a new and useful invention. Such an invention is patentable, even though it includes as a part something which is patented in a prior patent.

Now one who obtains such a patent should know that he cannot make, use or sell it, provided the prior patent is still in force, without the consent of the owner of the prior patent, for his patent or the patented thing infringes such prior patent.

We believe that much of the confusion arises from the words of the patent grant which purports to confer upon the patentee "the exclusive right to make, use and vend" his invention.

This is *not* what the patent secures to him, but what is given him is the right to exclude all others from making, using or vending his patented invention. This right he may enforce by his patent, even though he cannot make, use and sell it himself.

So that it follows that his patent for a new and useful invention will be given him by the Patent Office, even though it does infringe a prior patent, and also his patent may be absolutely good and valid even though he cannot make, use, or sell his own invention.





### Activities at the Wright Factory

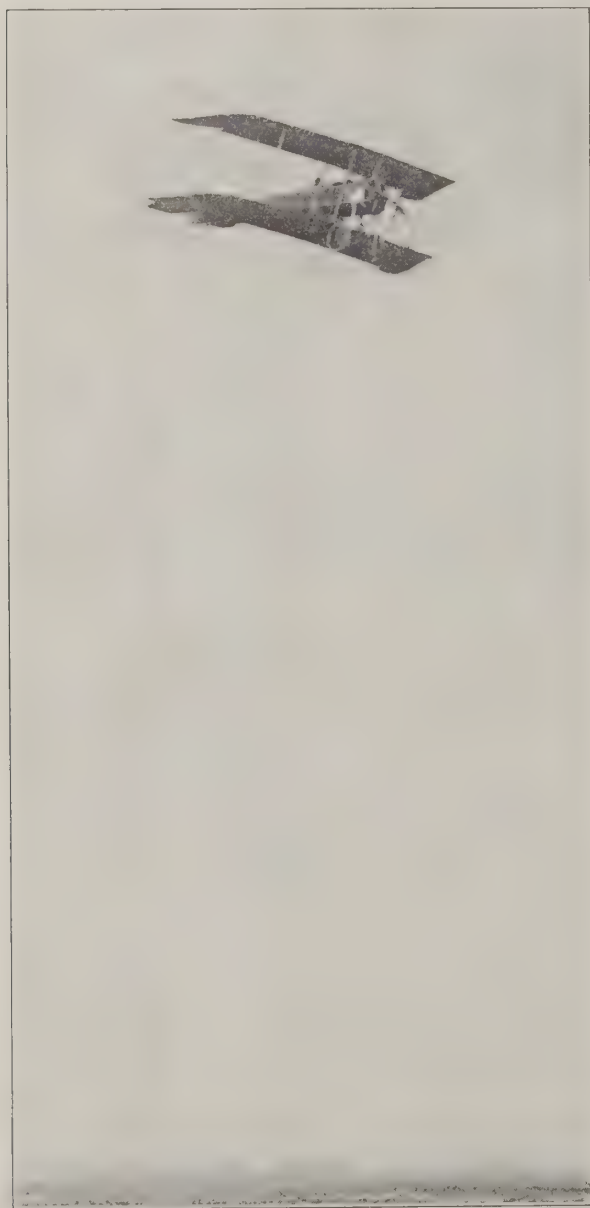
Two despatches from Dayton to New York newspapers tell of substantial activity at the Wright factory at Dayton, Ohio.

The first despatch brought the interesting news that Mr. Orville Wright designed a new motor to give 140 h.p., the first model of which is already near completion. The second despatch reads as follows:

DAYTON, O., March 25.—Military aeroplanes almost as safe as rocking chairs will be turned out by the dozens at the Wright aeroplane factory here within a few months.

"Our new stabilizer, enabling an aviator to preserve his equilibrium with scarcely any effort, has been given the needed finishing touches," said Orville Wright to-day. "We could have commercialized it a few weeks ago had we not been rushed with orders for the armored military biplanes now so much in demand."

The new device invented by the pioneer aviator enables the air pilot almost to disregard treacherous air currents. Automatically, a biplane struck by a wind gust will right itself. Military pilots whose machines are so equipped may concentrate their attention upon the foe below, but Wright refused to forecast the effect upon modern aerial warfare of his invention.



The 100 Gnome Gallaudet Tractor Biplane in Flight at Garden City, Aerodrome piloted by P. C. Millman. It is estimated that this machine attains a speed of over 82 miles an hour.

"We have no opinions at our factory," he laughed. "Just now we are working full time, turning out our standard military type of armored biplane. What nations gets the machines after they leave our factory we don't know; the shipping orders are executed after the biplanes leave Dayton. We are not sending any hydro-aeroplanes to Europe. They were tried out early in the war and were failures. The greatest demand is for a plane that can carry 1,000 pounds and climb to high altitudes, at the same time possessing maximum qualifications for speed."

### Army Flying School May Be Located at Pensacola

The army reservation at Pensacola is to be considered by the War Department as a possible location for the army aviation school. This is a result of the work of President Dobson of the Chamber of Commerce and Senator Fletcher.

Secretary Garrison writes Senator Fletcher regarding the matter as follows:

"My dear Senator:

"I beg to acknowledge the receipt of your letter of the 10th instant on the subject of the consideration of Pensacola, Florida, in connection with the establishment of an aviation post on the army reservation there, and to say that the board which I am about to constitute in compliance with the provisions of the army appropriation bill for the fiscal year ending June 30, 1916, will be instructed to investigate the possibilities of this reservation for the purposes indicated.

"Very sincerely yours,

"Lindley M. Garrison,  
"Secretary of War."

### Garden City Aerodrome

By P. C. Millman

Kantner, in the Hungington tractor, has been doing quite some flying during the week, as also has Heinrich in his 110 Gyro motored military tractor. Millman made a number of excellent flights in the 100 Gnome Gallaudet and reports that the machine handles wonderfully. The 90 h.p. Gyro Gallaudet will be out this week and some interesting flying is expected to take place. Those who have watched the 100 Gnome Gallaudet in flight were enthusiastic at the way it flew and a number have estimated that its speed is at least 80 miles an hour.

There is considerable speculation as to which machine is the fastest and it is expected that the point will be settled by a race between Heinrich and Millman.

On Saturday, March 28th, another party from the Aero Club of America visited the field and in spite of the high wind passenger flights were in order practically all during the afternoon while Millman demonstrated the 100 Gnome Gallaudet.

Many flights were made by both Kantner and Heinrich. Amongst those carried by Kantner in the Hungington machine were Mrs. Harrington Emerson, Lawrence Sperry, Mr. Menkel, and Walter Lowe Fairchild. Those carried by Heinrich were Miss Heinrich, Mr. Harrington Emerson, and George Page.

Amongst the visitors were Mrs. Heinrich, Lieut. Piotrowski, of the imperial Russian navy, Harry N. Atwood and Henry Woodhouse. On Sunday, John Guy Gilpatric took the 80 Kirkham Aero Marine tractor out for a test and made an excellent flight, while Millman flew 100 Gnome Gallaudet.

### Aviation at Fort McHenry

Jannus brothers, the aviators, want to establish an aviation base at Fort McHenry. A formal request for the privilege was made of Mayor Preston yesterday by Antony Jannus, who called at the City Hall. The Mayor gave Mr. Jannus the following letter:

Mr. Antony Jannus,  
Baltimore, Md.

Dear Sir:

In respect to your request to-day that you be allowed to make Fort McHenry a base for your hydroaeroplane flights, I beg to say that in my judgment this would be a most interesting and attractive addition to Fort McHenry. I believe that it would meet with the approval of the people and be a most interesting exhibition.

The control of Fort McHenry, however, has been turned over to the Park Board, subject to the Federal Government's final approval, and if you will take the matter up with them I have no doubt but that you will obtain satisfactory results.

James H. Preston, Mayor.

The proposition will be laid before the Park Board at its next meeting.



*The new Martin Military Pusher, equipped with Curtiss OX Motor*

John D. Cooper, the crack demonstrator who has the distinction of having taught water flying to the chief pilots of a half dozen different countries is now constructing machines of his own design with the hope of supplying them to his former pupils of the various countries.

J. D. C., being popular, has everybody's hearty wish for success.

Samuel S. Pierce the expert pilot who was listed to be the pilot of the Burgess Dunne war-plane constructed for Russia has been at the Curtiss camp at Hammondsport for the past month.

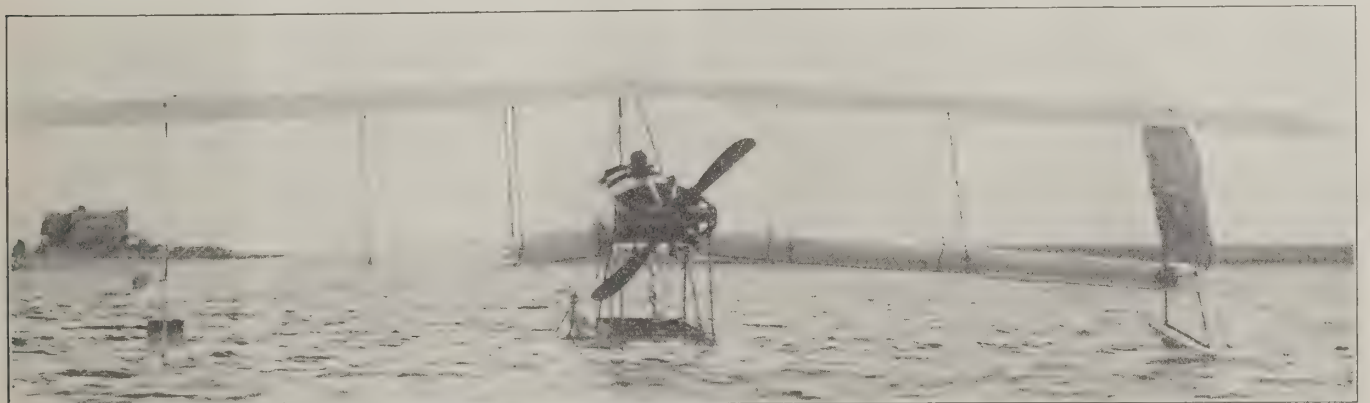
Edgar M. Berliner, the son of the Washington wizard, to whom aviation is indebted for the Gyro motor, is thinking hard of getting an aeroplane to use for commuting between Montreal, where he lives, and New York, where he passes much of his time attending to the ever increasing business of the New York offices of the Gyro Co.

Among the recent visitors to AERIAL AGE's offices was Mr. Noble Foss, son of ex-governor of Massachusetts, who is the head of the aeronautical department of the B. F. Sturtevant Company of Hyde Park, Boston, Mass. He was enthusiastic over the results given by the new 140 h.p. Sturtevant motor and reported an increasing interest in motors of high power, particularly from Europe.

Walter Lowe Fairchild, who will be remembered as having constructed one of the first successful monoplanes in America, has been bitten by the "Aeronitis" bug and has returned to the game, this time with a motor which he is confident will soon be making aviation history. Beyond the fact that the motor is fitted with a rotary valve, little is known about it except that it is claimed to be remarkably efficient and reliable.



*Alan R. Hawley, President of the Aero Club of America in flight with Harold Kantner in the 80 Gyro Motored Huntington Military Tractor Biplane*



*Rear view of the special armored Burgess-Dunne built for the Russian government—This machine is equipped with 110 h. p. Gyro motor*



Leo Stevens' light, which is never hidden under a bushel, blazes above the Strand theatre in New York every night in the shape of a captive balloon with electric light inside. Swayed by the gentle breezes it attracts the attention, not only of the Broadway throng, but also of thousands of people for miles around. It is the best advertisement on Broadway and in the summer, when the multitude seeks the coolness of roof gardens its attractiveness will beat the most expensive advertisements of the Metropolis.

### Plans Flights

Aeroplane and balloon flights from Philadelphia will be made soon, if the plans of the Aero Club of Pennsylvania do not miscarry. It is intended to conduct an aeroplane flight from Baltimore to Philadelphia and also a balloon and motor race. The Baltimore-Philadelphia flight will be made by Antony Jannus, of Washington.

The balloon race will be open to spherical balloons of not more than 40,000 cubic feet capacity. The objective point will be determined by the direction of the wind at the time of the start of the race. The winner will be the one that lands nearest that point. When the balloons start, automobiles and motorcycles will leave for the same point, and the one reaching the winning balloon first will be declared winner. The club hopes to obtain the co-operation of various automobile and motorcycle clubs throughout the city. Cups have been guaranteed.

### Aeronautics at University of Michigan

Ann Arbor, Mich.—Courses of study in the science of aeronautics have recently been established by the College of Engineering. The work is under the direction of Professor Sadler of the department of naval architecture. Associated with him in the conduct of these courses is Mr. Pawlowski, who, besides being a mechanical engineer, has made a special study of aeronautics at the University of Paris and in Germany.

### Niles Quits Mexico

Charles F. Niles, who has been chief of the aviators of the Carranza army in Mexico at a salary of \$300 a week, gold, arrived in New Orleans recently. Niles announced that his future plans lay far from the scene of war and bloodshed. He has gone to his home in Rochester, N. Y., for a short visit, before making the journey to San Francisco, where he has engagements.

Niles, who has had enough of the revolutions, says:

"I was the first aviator to fly over Mexico City. I was in advance of the Carranza army, when the Federals were retiring from the city. When I landed in the public square I was surrounded by Mexicans, and, would you believe it, these same Mexicans actually cried in chorus, 'Viva Americano.' They thought that I was

from the United States Army, and that the army was at my heels. I guess I was the first American to be cheered in Mexico City since the time Scott marched his soldiers in, and the people cheered out of courtesy.

"I tell you this incident just to show the temper of the people at the capital. They want intervention, have long been ardently hoping to see the United States troops in the country as the only sure and certain pacific agency."

Eleonora Sears continues to make her presence felt in California. Her latest in the sports line is aviation, which she has tried before, but never under such attractive auspices as she has found at the aviation school at North Island, where there are any number of student officers at the Army camp.

### Long Beach, Cal.

Earl Daugherty made a flight from in front of the Earl apartments. After posing for the photographers he rose to a height of 3,500 feet, flew out over the Virginia Country club, remaining in the air more than twenty-five minutes altogether. Next week Daugherty expects to make several flights for the Bentley theater, negotiations for which are now under way with the management.

### St. Louis Aviator Plans Aero Bus Line Over River

George J. Stumpf, a St. Louis aviator, is in Burlington, Ia., where he plans, with C. N. Lockwood, to open an aeroplane factory. In connection with the factory, they intend to establish an aerobus line on the Mississippi River between Burlington and Ft. Madison, Ia., a distance of 21 miles.

Stumpf is 24 years old. Besides being an aviator, he is an all-round athlete. He was a member of the Missouri Athletic Club. Both he and Lockwood made good records at Kinloch Field last summer.

### Trade

D. M. Parker, of London, Ontario, a promising amateur builder, is purchasing supplies through the Jannus Brothers and has lately been negotiating for an eight cylinder Maximotor. Mr. Parker plans to be in Baltimore Wednesday, March 31st, at the launching of the new Exposition Model Jannus flying boat.

Chas. F. Thoms and L. D. Thompson of Highlandtown, Baltimore, Md., are building a copy of the older Jannus boat. They have purchased, through the firm, an A6 85-h.p. Maximotor for late April delivery.

### Death Defying Stunt in the Movies

In spite of the growing spirit of devil-may-care which is noticeable among so many film people who have endeavored to make a reputation in the thrill department of moving pictures, there have been very few fatal accidents, and most of those which did result fatally were the result of carelessness on the part of the participants, owing to the fact that it seemed so easy, and had been done so many times before, successfully. The camera is getting so clear-eyed and all-observing, that it is almost impossible to fake an accident in the manner that some of these have been faked in previous times.

For a large company like the Universal, there has been a very noticeable lack of fatality through stunt-pulling in pictures. The one notable accident is the sad case of Frank Stites, which occurred at the opening of Universal City, and which put a damper on all future festivities in connection with the opening. Mr. Laemmle ordered an entire abandonment of the program following this sad death, which shocked the 20,000 people who witnessed it.

Mr. Stites, who had been taking several pictures for the Universal in his aeroplane, had already made a successful picture called "The Mysterious Contrograv," in which he flies over a second aeroplane and drops a bomb on it. This bomb wrecks the lower aeroplane, which falls to the ground, and plays an important part in the film. This stunt had been rehearsed thoroughly, and had been accomplished in the film itself. It was placed on the program as one of the stunts to be shown during the opening, and everything was planned exactly as had been planned for the picture, even to the training of camera on the stunt.

Everything would doubtless have gone well had not the human factor entered into it to an excessive extent. Mr. Stites was a very warm personal friend of Lincoln Beachey, who perished on the Sunday previous in the San Francisco Bay. On the Monday following, when Stites was to perform his stunt, he was unable to relieve his mind of the depression engendered by his friend's fatal accident, and he was unable to make an ascent. The newspaper story telling of the accident was in his pocket, and he even took this out and threw it away, thinking that this might have some effect upon his nerve, but it didn't, and he postponed the stunt until the next day.

On Tuesday, about 5 o'clock, he made an ascent and after a couple of false starts he went up, and was apparently performing his part all right. He had dropped the bomb, and the account of the accident given by his friends states that the explosion of the aeroplane formed an air-pocket into which Stites fell, and his machine turned over on its back. Ordinarily, Stites would have been able to right it, but he was not strapped into the machine, and in apparent fear that the machine would fall on him, he leaped from it, a distance of 50 feet to the ground, and was killed by concussion of the brain.



Stites Keeling over, following the blowing up of the dummy machine. Courtesy of Mr. Gulick



# Foreign News

Reported by L. d'Orcy and Robert Pluym

## Austria-Hungary

The siege and capture by Russian arms of the great fortress of Przemyśl recalls the valuable use made by the Austro-Hungarian Army of aeroplanes.

The only communication with the outside world was by means of a wireless station and by an occasional aeroplane flight to and fro between the city and beyond the gradually retreating Austrian armies.

At one period of the siege an attempt was made to provision the city by means of aeroplanes making daily trips from Cracow to Przemyśl. On March 15th, the Russians brought down an aeroplane laden with canned beef.

An Austrian aviation detachment which left the fortress before it was taken reported that the work of destruction before the surrender was thorough.

The Russian Army operating on the border of Transylvania has captured a novel Austrian warplane whose features had so far been kept secret. This machine is a biplane of the *Lorinan* system and is fitted with a 6 cylinder 120 h.p. engine of the stationary type; it has a span of 50 ft., a length of 30 ft. 6 in. and a surface of 550 sq. ft. It is fitted with an automatic stabilizer and has a fuel capacity for ten hours.

The Austro-Hungarian Army's aeroplane fleet consisted before the outbreak of the Great War of some odd 150 machines, partly *Etrich-Taube* monoplanes and *Lohner-Propeller* (arrow) biplanes.

The local aeroplane factories have however not been able to furnish a sufficient number of machines during the war and the Austro-Hungarian Army is now filling the needs of its air fleet through German channels, the machines selected being those used as a standard in the German Army, viz., the *Albatros*, *Aviatik*, *D-F-W* and *L-V-G*.

All these machines are biplanes fitted with 100 h.p. engines either of the Mercedes or the Austro-Daimler make.

Satisfactory results have also warranted the adoption of a new Austrian make, the *Lloyd* biplane.

## Belgium

Allied aviators have been taking advantage of the perfect Spring weather and appeared on March 23d in great numbers over the Belgian coast, being furiously shelled by the batteries along the seashore. Bombs were dropped on Ostend and did considerable damage to the stores.

## Egypt

A second attempt was made on March 22d by the Turkish Army of invasion to cross in force the Suez Canal. The allied aeroplane patrols frustrated, however, this plan and reported in time the advancing enemy, which enabled the defence forces to beat off the Turks with comparative ease.

## France

On March 22nd French aviators actively replied to the Zeppelin raid on Paris, when, in Belgium, twenty bombs were thrown on an aerodrome, on the railway and also on the stations at Lichterfelde and Essen. Ten shells were thrown on the stations at Merkem and Wyvege.

Near LaBasse, two of the enemy aviators were chased and compelled to return to their own lines. At Roye the station was effectively bombarded.

In the Valley of the Aisne a German aviator was put to flight by two of our airmen.

In Champagne five hundred arrows were discharged on an enemy captive balloon. Several shells were thrown on the Bazincourt Station and also on the enemy's batteries at Brimont and Vailly. A German aviator was chased north of Rheims.

In Alsace Sergeant Falso and Sub-Lieutenant Moreau downed an aviator on the railway west of Colmar. Six bombs were thrown on the Cernay station and the Mullheim barracks.

The Altkirch station was effectively bombarded.

We bombarded, in Belgium, the station at Staden and various cantonments. Several bombs were thrown with success on the aviation fields at La Brugette, also the La Fere barracks and the Anizy, Chauny, Tergnier and Coucy-le-Chateau stations were struck.

In Champagne the aviation field and munition depots at Pont-Faverge received day and night bombardments. Forty bombs were dropped in the neighborhood of Conflans-Larny with great effectiveness. The damage done here has been verified. Fribourg-en-Brisau barracks and station were struck by eight bombs.

\* \* \*

A second Zeppelin attack upon Paris was attempted at 9 o'clock on March 22nd. The German airships, believed to number eight, were divided into two groups. They attempted to approach the city from the northwest and north-east.

At the first alarm, the city was darkened and a fleet of French aeroplanes rose from the several stations and set out to meet the foe's airships. The Zeppelins retired, but instead of abandoning their attempt to fly over Paris, they circled about the city.

Believing that the Zeppelins had returned to their base, most of the French aviators returned to Paris, but three remained on scout duty. Shortly after 11 o'clock one of them reported sighting Zeppelins over Villers Cotterets.

Once more the alarm sounded and the lights of the city, which had been reilluminated, were again extinguished. All the French searchlights were again put in action and the aeroplane fleet again set out to give battle to the enemy.

As the Zeppelins circled about the city, they were pursued by the monoplanes and given no opportunity to turn their course toward the main section of Paris. Finally, at 3 o'clock this morning, they darted away to the northward. This time there was no abandonment of the pursuit. The aeroplanes kept after the big airships until they had crossed the River Aisne.

\* \* \*

Georges Carpentier, the famous boxer who is commissioned to an aeroplane squadron as an automobile driver, is (contrary to German reports) not at all in captivity.

He was seen a short time ago near Paris and seemed to enjoy most excellent health.

Another mammoth airship successfully passed its acceptance tests short time ago near Paris.

This airship is the Lebaudy keel type dirigible *Tissandier* of 23,000 cu. m. and 1,000 h.p. and is provided with three independent cars. It has a speed of 75 kilometers (45 miles).

\* \* \*

A German kite-balloon of the Parseval-Siegsfeld type was destroyed at Belfort by a squadron of armored and armed Dorand biplanes.

\* \* \*

According to the *Temps*, a semi-official news-paper, it was the new decision arrived at by the military authorities that prevented on March 23d the arrival of the Zeppelins over Paris. The preceding Sunday, which saw the first raid of German airships upon the French capital, the authorities opposed the idea of an aerial battle above the city.

Now Parisians are warned to keep to cover in future, lest projectiles from the cannon on the French aeroplanes do greater damage than the bombs dropped by German airships.

\* \* \*

On March 25th, six French aviators dropped bombs on the railway station at Metz and the hangars at Frescati. The airmen were subjected to a violent gun fire but returned unharmed to the French lines.

According to German advice three soldiers were killed in this attack.

Other French aviators bombarded the barracks east of Strasbourg.

## Great Britain

As a result of a daring raid by British aviators on Antwerp on March 24th, one German submarine in Cockerill's Shipyard at Hoboken was completely destroyed and another was very seriously damaged.

The Admiralty report issued the same day says:

"The following has been received from Wing Commander Longmore: 'I have to report that a successful air attack was carried out this morning by five machines of the Dunkirk Squadron on the German submarines being constructed at Hoboken, near Antwerp.

"Two of the pilots had to return, owing to thick weather, but Squadron Commander Ivor T. Courtney and Flight Lieut. H. Rosher reached their objective and after planing down to 1,000 feet, dropped four bombs each on the submarines.

"It is believed that considerable damage has been done to both the works and two submarines. The works were observed to be on fire. In all, five submarines were observed on the slip.

"Flight Lieut. B. Crossley-Meates was obliged by engine trouble to descend in Holland. Owing to the mist, the two pilots experienced considerable difficulty in finding their way, and they were subjected to a heavy gun fire while delivering their attacks."

\* \* \*

The British steamer *Pandion*, which arrived on March 23d at Southampton, reports that in the vicinity of the North Hinder Lightship, she was twice attacked by a German seaplane.

Seven bombs were dropped by the aircraft, some of which fell very close to the *Pandion*, but the steamer escaped damage.

\* \* \*

In reply to numerous inquiries the British Army Council makes it known that no volunteers are enrolled in the Royal Flying Corps unless they are *British subjects*.

Airmen of British nationality and having an F. A. I. certificate may apply in person at the Officer Commanding, Administrative Wing, South Farnborough; those who want to get a commission as an officer have to apply in person at the War Office, London.

\* \* \*

According to reliable information received from London, the British Navy now has in commission twelve powerful dirigibles, which are soon to be launched against the German fortresses and naval bases.

(About a year ago the British Navy ordered nine dirigibles to be constructed. Four of them were to be of the 12,000 cu.m. *Parseval* pressure type (of which Vickers Sons and Maxim's holds the licence); three of the 12,000 cu.m. *Forlanini* keel type, to be constructed by Armstrong & Whitworth; and two of a new *Asira-Torres* type of 18,000 cu.m. Besides these airships there were two huge 25,000 cu.m. structure type (rigid) dirigibles building, one at Vickers and one at Armstrong, and two large airships, one *Astra-Torrès* and one *Parseval* in commission. The Navy owned also five small training airships.)

## Italy

John Lansing Callan, the Curtiss representative in Italy, in an article about the earthquake in Italy in *Leslie's Weekly* for March 11th, tells of his experiences—and those of Beckwith Havens, the whilom Curtiss pilot, and C. T. Chenevert, who was his passenger in the flying boat cruise from Chicago to Detroit in 1913. He writes in part:

"I was in Rome at the Grand Hotel when the shock took place and was awakened by feeling my bed violently rocked. I jumped up and went to the window to see what was happening, for I imagined that a cyclone had struck the city. The reason for this was a queer sound that resembled a heavy wind, but which I afterwards decided must have been caused by the groans of the buildings as they swayed back and forth. It was very difficult to keep on one's feet. When I saw across the court of the hotel that the palms and flowers on the roof were not being bent by a wind I realized that it was an earthquake. By this time the heaviest part of the shock was over, but the hotel continued to sway in a most alarming manner. It did not take me long to get dressed. Things quieted down and in a few minutes the porter of the hotel knocked on my door to announce, unnecessarily, that we had had a 'terremoto.' \* \* \* Two friends of mine, Mr. Beckwith Havens and Mr. C. T. Chenevert, who were also stopping at the hotel, met me in the hall and we all walked down stairs together. We found the steps covered with fallen plaster and large cracks were seen in all of the walls. In their room a great amount of plaster had fallen and Mr. Haven's bed was filled with it. He had had experiences before with earthquakes so that at the first shaking he made a rush for the doorway leading to the bath and stood there after calling to Mr. Chenevert to join him."

## Turkey

A German aeroplane coming from the direction of the Gallipoli Peninsula flew over Tenedos on March 25th. Crossing the island, it circled around high above the Anglo-French fleet lying anchored on the western side of the island, after which the airman returned in the direction whence he came.





Aeronitis is a pleasant, a decidedly infectious, ailment which makes its victims "flighty," mentally and physically. At times it has a pathologic, at times merely a psychologic foundation. It already has affected thousands; it will get the rest of the world in time. Its symptoms vary in each case and each victim has a different story to tell. When you finish this column you may be infected, and may have a story all of your own. If so, your contribution will be welcomed by your fellow *aeronuts*. Initials of contributor will be printed when requested.

### Wanted: Aeroplanes Capable of Carrying Bulky Furniture

Dear Editor:

In trying to figure out why a few Congressmen are so opposed to using aeroplanes for mail carrying did it ever occur to you that one reason may be that the present aeroplanes could not be used to carry pianos, dressers, beds, and other bulky articles of furniture, therefore, those Congressmen who have been using their franking privileges for moving furniture by mail could not avail themselves of it? X. Y. Z.

Guess who is going to build the first dirigible for the Navy!

A New York publisher recently suggested to a moving-picture manager that Ralph Connor's "Sky Pilot" would make a good "movie." "Yes," said the other, "that would be a dandy, and you must let me have it, for I have the best aviator-actor in the world up in our plant!"—*Times Book Review*.

Will some aviation bard please replace the parody "I didn't raise my dog to be a sausage" with one to the effect that "I didn't build my plane to be a rocket?" The old days of "up like a rocket and down like a stick" have not changed much except that it is harder to get publicity unless you get killed and everybody loves a dead man.

The high batting average maintained by the military aviators of Europe seems to prove that there is less danger in flying with good equipment than there is in the trenches.

### How to Become an Aviator



Pick out a nice grassy spot on a hillside, lie down on your back and watch the birds fly overhead.

Observe them carefully until you find out how they do it.

Then go and do it yourself.

—NEW YORK "WORLD."

### Gallaudet Eagles

It was remarked last week that an officer of the Allied countries expressed his fear that the *taube* lines of the swift Gallaudet tractor might attract fire from the anti-aircraft guns of his country. An officer of another of the Allied countries was on the field on Saturday and expressed special interest in the same machines.

"We are very much interested in this type of machines," he remarked. "They can scout over the German lines with impunity. This Gallaudet type being faster than the fastest German types would have additional advantage. It would be an eagle among *taubes*!"

Incidentally, the resourceful Gallaudet brothers promptly advised the other officer that they can supply the degree of efficiency of their present pigeon-shaped machines in eagle-shaped machines.

A Jacksonville, Florida, exchange that reached the editorial sanctum recently had an item with a double-column heading reading: "Flying Squadron Closed Campaign Here Last Night." Surprise was followed by interest until the subheadings had been read and the introduction followed: "Last evening the third group of the Flying Squadron of America closed the campaign which has been conducted in this city for the past three days in the interest of a nation-wide prohibition."

The writer went no further. The subject was not interesting.

A few days later an exchange from Houston, Texas, attracted attention. A double-column heading "Plans Made in Houston for Visit of Flying Squadron" made the writer read eagerly, in the expectation of learning that the U. S. Aviation Corps was moving from San Diego to Houston. What he read was:

"R. S. Middleton of Grafton, W. Va., advance representative of the Flying Squadron of America, was in the city Wednesday and met with the local committee on arrangements for the coming of the squadron to Houston March 22, 23 and 24. The head of the squadron is now at Atlanta. Mr. Middleton stated that the services would be held in the First Presbyterian Church afternoon and evening of March 22 and 23, and in the City Auditorium afternoon and evening of March 24."

The rest went in the basket unread.

A few days later an item in the Watertown, N. Y. *Times* attracted attention, through its heading: "Aviators Entertained," which the writer mentally connected with the efforts of the Naval Reserve located in that town to find aviators and organize an aviation squadron, in compliance with the orders of the Navy Departments. Part of the item, as far as the writer went, read:

"One of the most pleasant affairs of the winter was the banquet given on Friday evening by the Aviators at their hall from 7 to 11.30, the ladies being their guests. A luncheon was served at 7.30. After the luncheon a program was given, the president, Frank M. Wiggins, presiding. The first was a quartet by Glenn F. Graham, William W. Collins, Hector Adams and Charles W. Nims, followed by the recitation, "The Long-Handled Dipper That Hangs by the Sink," by Schuyler W. Schermerhorn. One of the most interesting things of the evening was the extracts read from the Aviators' Digest, a semi-annual publication, giving the history of the club. Verner Phelps gave a vocal solo and Glenn F. Graham an original reading. The program closed with the quartet singing 'Good Night, Ladies.'"

A protest is entered herewith against this kind of fraud. The terms used are absolutely misleading. The parties involved have no license to use any aeronautical terms other than low-flyers and high-flyers respectively.



# MODEL NEWS

BY WALTER H. PHIPPS

## CLUBS

**THE AERO SCIENCE CLUB OF AMERICA**  
29 West 39th Street, New York City

**PHILADELPHIA MODEL AERO CLUB**  
2208 Brown Street, Philadelphia, Pa.

**PACIFIC NORTHWEST MODEL AERO CLUB**  
915 Ravenna Boulevard, Seattle, Wash.

**LONG ISLAND MODEL AERO CLUB**  
401 Grant Ave., Cypress Hills, L. I.

**BAY RIDGE MODEL CLUB**  
6730 Ridge Boulevard, Bay Ridge, Brooklyn

**CONCORD MODEL AERO CLUB**  
Concord, Mass.

**SUMMIT MODEL AERO CLUB**  
26 Shady Side Ave., Summit, N. J.

**THE ILLINOIS MODEL AERO CLUB**  
Room 130, Auditorium Hotel, Chicago, Ill.

**MILWAUKEE MODEL AERO CLUB**  
402 Bradford Ave., Milwaukee, Wisc.

**CONCORD MODEL CLUB**  
c/o Edward P. Warner, Concord, Mass.

**AERO CLUB OF ST. LOUIS**  
Columbia Bldg., 8th & Locust Sts., St. Louis, Mo.

**MODEL AERO CLUB OF OXFORD**  
Oxford, Pa.

## Aero Science Club Activities

At the highly interesting meeting held March 27th nominations for the officers for the coming year were in order, the elections to be held on the following meeting. Mr. Lawrence Sperry, the noted aviator who has been flying a great deal around New York lately was introduced by Walter H. Phipps and gave the club members a highly interesting technical talk on the explanation of the operation of the Sperry Automatic Gyroscopic Stabilizer, which has established itself as the foremost aeronautic invention of to-day by winning the stability prize in France last summer. Mr. Sperry also discussed the handling of the Automatic Flying Boat as well as explaining numerous other stability devices which have been tried. The members of the A. S. C. were much pleased to have Mr. Sperry as a visitor and desire to express their appreciation for his valuable lecture.

A discussion on Steam and Compressed Air motors proved to be very instructive, a number of the Power enthusiasts have recently started on new engines of their own types, in fact, one of them is so far gone on Steam Motors that he has sworn off rubber driven models forever. The relative value of the two methods of driving was thoroughly gone over and considered. One of Mr. Frank Schoeber's steam plants was on hand for exhibition.

The April speed meet will be held at Van Cortlandt Park on the 18th of next month, over a 528-foot course for R.O.G. models to rise with the wind. Arrangements for this meet are now undergoing completion and a few speed models have already proven to be capable of doing everything that is expected of them. Mr. Geo. McLaughlin and Mr. Edw. Durant have been elected Starter and Judge, respectively. A large entry list has already been filled out, every flyer in the club has an exceptionally strong liking for speed models. A model of good size has recently been tried out with but 17¼ sq. in. of surface. The weight of this machine was considered by many to be too great, but nevertheless a number of fine flights have been made with it.

Among the Long Island Section the floaters and duration models are pre-eminent, the whole club has decided to fly their models consistently for three months with the sole object of making some development along these lines and establishing as many duration records as possible within that time. Good results are expected as almost all of the members of that branch have had the reputation of being excellent duration flyers in the past.

## Illinois Model Aero Club

By Ellis Cook

The Illinois Model Aero Club has just finished its series of indoor flying meets in the Banquet Hall of the Auditorium Hotel. A total of five meets were held very successfully. The meets were open only for covered in fuselage models under 24 inches in length, the machines being built for stability and directional control, no duration counting in the scoring. Despite the fact that the meets were not for duration, at the first meet Mr.

Wingart's small sixteen-inch covered in fuselage tractor tied the club record for R. O. G. tractor duration of 32 seconds, the record held by the late Addison Cruver and made by him in 1913.

Although any type of model was allowed to enter the meet all of the models were single tractors of both monoplane and biplane types, the monoplanes predominating. These meets were well attended by the members of the club and around forty different models were brought out in all, the scarcity of failures being an exception, for tractors particularly.

A good number of new models for outdoor flying are expected out soon, probably the one most looked for is Mr. Lindsay Hittle's small tractor which complete is not to weigh over sixteenth ounce. This may seem impossible but Mr. Hittle's reputation for light construction is well established; his hydro of last summer proved this. Only 24 inches in length and weighing but 1.4 oz., this model repeatedly made durations of over one minute, the best being 72 secs. unofficial; finally finishing the season with a flight of 115 secs. H. L. with floats attached. It is expected that the new tractor will do around 100 secs. Besides making attempts at the tractor records, Mr. Hittle will also try for the hydro record of 67 secs. held by Ellis Cook. He will not be alone in this, for reports of new hydros are current and it will not be surprising if the hydro record is increased to 80 or even 100 secs. during the coming season.

The Illinois Model Aero Club has very good facilities for both land and hydro flying with the Aero Club of Illinois flying field at Cicero which the Aero Club of Illinois has extended the use of for land models, Mr. Charles Dickinson has kindly given the use of his place on Lake Calumet, Mr. James Stevens entertained the club at his residence bordering on Lake Michigan, while Mr. L. A. Vilas and Mr. C. C. Witmer put their hydro haven at the Illinois Model Aero Club's disposal besides giving two rides as prizes in their airboats at Lincoln Park. The Illinois Model Aero Club wishes to thank all of these gentlemen for the kindness and assistance given by them.

Early last summer this club was struck by the wave of scientific designing and building and since then the results have been marvelous, not only in the flying, but in the construction of the models and all meets and competitions are run to further that end wherever possible.

Hoping for the success and increased popularity of "AERIAL AGE," I remain,

Sincerely yours,

Ellis Cook.

## A Letter of Appreciation from a Well Known Model Enthusiast

Mr. Walter H. Phipps,  
New York City.

Dear Sir:

It is a real pleasure to learn that a new Aeronautical Weekly is to be started in America. The need for such a publication has been deeply felt by all those with whom I am acquainted.

I shall be very glad to send you model news each week from the Boston district. I can send a report of the week end's



# HEINRICH

Armored Military Tractor  
110 H. P. GYRO MOTOR



Climb, First Trial, 1000 Feet Per Minute with Passenger

**TRACTOR BIPLANES, MONOPLANES,  
FLYING BOATS**

*Military Machines a Specialty*

Learn to Fly at the Heinrich School of Practical Aviation  
Tuition Fee, \$300

**Heinrich Aeroplane Company**  
CHARLES BLDG.  
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TRACTOR BIPLANES *and*  
HYDRO - MONOPLANES

Aeroplanes de Luxe for Boating, Racing, Cross Country Flying



A Gallaudet 100 H. P. Military Tractor flying with pilot's hands off the controls, proving remarkable inherent stability

**THE GALLAUDET CO., Inc.**  
NORWICH, CONN., U. S. A.

activities each Monday, and there are several students here who will be glad to write on their experiments and deductions.

The first meet of our spring series was held March 13th, the winner making a distance of 1,220 feet. The wind conditions were very unfavorable as the field was surrounded by trees and water and the stability of the models was severely tested, those which had hitherto been most successful failing from lack of power. The third prize was won by Mr. Francis W. Hatch with a distance of 800 feet. His model struck in the topmost branches of the only tree on the field when it was barely half run down. The following is the summary of the contest:

First. Arthur Rockwood of Medford ..... 1,220 feet  
Second. Earl H. Bean of Melrose ..... 810 feet  
Third. Francis W. Hatch of Medford ..... 800 feet

The entries and judges were:

*Competitors:*

1. Earl H. Bean, Melrose
2. Lawrence H. Flett, Melrose
3. James P. Borland, Concord
4. Benjamin Smith, Concord
5. Morison Blake, Concord
6. Edward P. Warner, Concord
7. Max Blanchard, Chicago
8. Robert Warner, Concord
9. David Gregg, Brookline
10. Francis W. Hatch, Medford
11. William W. Weeden, Concord
12. Waid Carl, Concord
13. Edmund E. Bates, Medford
14. J. Eliot Peckham, Medford
15. Thomas Hollis, Jr., Concord
16. Arthur Rockwood, Medford
17. Richard K. Kenna, Sussex, England
18. Wolsey Pratt, Concord

*Starter and Judge:* Earle L. Ovington

*Scorer:* Harold W. Craver

*Measurers:* Joseph Atwood, Blake Darling, John C. Hollis, Edward W. Lombard.

I enclose one year's subscription for AERIAL AGE starting with the first number.

Wishing you all possible success, and a long and prosperous life to the magazine, I remain,

Yours sincerely,  
Edward P. Warner

**Letter and Bulletin of the Model Aero  
Club of Oxford**

The following is the Bulletin of the Model Aero Club of Oxford (Pa.) for April:

Regular meeting of Board ..... April 1  
H. L. Meet ..... April 3  
R. O. G. Meet ..... April 10  
Single Tractor Screw Meet ..... April 17  
Hydro and Triad Meet ..... April 24

(Continued from page 54)

*Controls*

Lateral balance is maintained by ailerons 8 feet by 3 feet by 2 feet, 6 inches and are attached to the trailing edge of the upper plane.

The vertical rudder is of the balanced type with 10 square feet of surface.

The horizontal rudders, or elevators, have 16 square feet of surface.

The fixed tail plane, or stabilizer, has 28 square feet of surface.

All control wires are in duplicate. Either the "Three in one" or the "Deperdussin" control is provided with these machines.

*General Dimensions*

Span upper plane ..... 35' 0"  
Span lower plane ..... 28' 0"  
Chord ..... 5' 0"  
Gap ..... 5' 0"  
Gliding angle, degrees ..... 10 to 1  
Ailerons, (3) ..... 8' x 3' x 2' 6", 22 sq. ft. area  
Length over all ..... 24' 0"  
Rudder area ..... 10 sq. feet  
Elevators ..... 16 sq. feet  
Area fixed tail plane ..... 28 sq. feet  
Passengers ..... 2  
Fuel capacity ..... 5 hours  
Speed range loaded ..... 45 to 80 m.p.h.  
Climbing speed loaded ..... 4,000 feet in 10 minutes  
Weight loaded ..... 1,630 lbs.  
Weight empty ..... 1,050 lbs.  
Weight for shipment (crated) ..... 1,200 lbs.  
List price f.o.b. New York ..... \$8,000  
Hydroaeroplane equipment extra ..... \$500

Advertising  
in this department  
10c. a word  
\$2.50 minimum

## Classified Advertising

Forms close for this department on Monday preceding date of issue

**Wanted**—Immediately. Three expert Draftsmen, having experience in the design of aeroplanes or in the detailing of aeroplane parts.

Address, Aerial Age, Box 6  
116 West 32nd Street, New York City

### Manager Wanted

for aviator planning long distance flight. Must be experienced in securing exhibition dates.

Address, Aerial Age, Box 7  
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### For Sale

Curtiss Flying Boat.  
1913 Type. Excellent condition.

Address, Aerial Age, Box 8  
116 West 32nd Street, New York City

### FOR SALE

**220 H. P. ANZANI MOTOR**

Address Box No. 9, "Flying," 120  
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### Experienced Engineer

open for engagement. Specialty high power, light-weight motors. If desired, can furnish designs for 180 hp. motor to weigh under 425 lbs. or as required. Six years' experience in all branches of motor design, manufacture and testing.

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### For Sale

Genuine Curtiss flying boat with Curtiss O X for sale at the right price. Also, Maxi flying boat with 100 hp. Maximotor six.

MAXIMOTOR MAKERS  
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### MODEL AEROPLANES DESIGNS and SUPPLIES

Real Scientific Models. Guaranteed to fly better than any other models ever put on the market before—All RECORD holding types, designed and tested by model experts.

"WORLD'S RECORD" FLYING BOAT (Official Record Holder)

Plan and instructions with full-sized hull lay-out, 50c. post paid. Plan and instructions alone, 35c.

Other Model Plans.—Phipps' "Avis" Tractor hydro-aeroplane, 25c., with pontoon blue prints, 35c.; "Long Island Racer," 25c.; Excelsior Tractor, 35c.; Bleriot Racer, 25c. Write now for complete 1915-1916 Instruction Book and Catalogue, 7c. post paid.

THE MODEL SUPPLY HOUSE, Walter H. Phipps, Dept. G. 503 5th Ave., New York

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Manufacturers want me to send them patents on useful inventions. Send me at once drawing and description of your invention and I will give you an honest report as to securing a patent and whether I can assist you in selling the patent. Highest references. Established 25 years. Personal attention in all cases.

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Loan and Trust Building, Washington, D. C.

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Manufacturers of

Seaplanes

Military Tractors

Submarine Destroyers

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Machines of all Types

BRIDGEPORT, CONNECTICUT

## CHAMPION TRACTORS

*The Best in the West*

Constructed by Experts in a Shop Perfectly Equipped for Highest Grade Work. "Safety First"

**Biplanes  
Monoplanes  
Aeroplane Fittings  
Gnome Engine Parts**

Exhibition Flights With a Guarantee

Write for Prices. Learn to Fly at Our School

**Frank Champion Aeroplane Co.**  
Overland Park, Kansas





ANTONY JANNUS

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## Jannus Brothers

**N**OW testing their new 120 h.p. Flying Boat. Announcement will be made shortly. A full working force of competent aviators for *instruction, exhibition and passenger carrying. Learn to fly at a Jannus School.* Tony Jannus and Fritz Ericson in the East; Roger Jannus and J. D. Smith at San Diego.

*Send for Booklet. Our teaching method is thorough and the most economical. Address as below*

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## AERONAUTICS

Indicating and Recording  
Instruments

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Aneroids, Compasses, Speed Indicators  
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and Revolution Counters  
either separate or on Complete Board

## QUEEN-GRAY CO.

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## AEROPLANES

Weigh *Five Pounds Less* per square foot  
than the average honeycomb type.  
Equal in Efficiency. Far More Durable

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## Full Line of Aeronautical Supplies

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*Write or call before you equip*

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MAKE AVIATION SAFER

*"Always Ready"*



Automatically hold the head out of water when exhausted or unconscious. Lessens the shock of a fall or bad landing. Protect against moisture and spray.

**Used by**

**Government Aviators**

The "Universal Life Line" Life Saving Mattresses and Pillows for bunks. Motor-boat Life Preservers and Ring Buoys. Swimming Float for Swimmers and those learning to swim.

**Boat and Canoe Cushions**

of any size or type. Made to comply with U. S. Motor-boat laws. All filled with the wonderfully buoyant "Ilanasilk."

**THEY CREATED A SENSATION AT THE MOTOR BOAT SHOW**

The Special Gold Medal and Exposition Gold Medal were awarded these equipments at International Exposition of American Museum of Safety, Grand Central Palace, New York, Dec. 12th to 19th, 1914.

*Write for Catalog*

## Robinson-Rodgers Co.

(Established 1790)

Universal Life Saving Equipment Dept., NEWARK, N. J.

"WE PAY THE EXPRESS"

# Martin Tractors Break Records

Remarkable Sunrise-to-Sunset Flight by Lieutenant Byron Q. Jones,  
of U. S. Signal Corps, at San Diego, January 15th, 1915

This flight of eight hours and fifty-three minutes, consuming but three gallons and one pint of gasoline per hour, proves conclusively the extreme economy of consumed power in this latest type machine.



Awarded "Medal of Merit" for establishing the American Passenger Duration Record of 5½ hours, carrying Official Military Load, October 20th, 1914, at San Diego, Cal.

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DETAILED  
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ASK ABOUT OUR  
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A scientifically built machine of staunch construction and highest efficiency.  
Speed range 40 to 90 miles: gliding angle with dead motor, 10 to 1

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READY NINE DAYS AHEAD OF SCHEDULE

SO certain of its sound design and construction, and consequent performance, was our pilot, Harold Kantner, that he gave this machine its first flights on March 11th, immediately upon completion, in spite of a wind velocity of 25 miles per hour.



SO pleased was Mr. Kantner with its handling, that many passengers have been carried since, regardless of weather conditions. No changes were required, and the balance proved correct without alteration.

We are exceptionally prepared—by virtue of the character of the company, the personnel, the factory, and the tool equipment—to execute orders with skill, expedition, and all-around satisfaction, for all types of aircraft.

We have not sought business first, around which to build our equipment. We have prepared first, and are now ready for any business which comes. We have designs completed and materials selected for the construction of:—

**Military Machines for the Army and Navy**

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**A new and convincing type of Pleasure Craft for the Sportsman**

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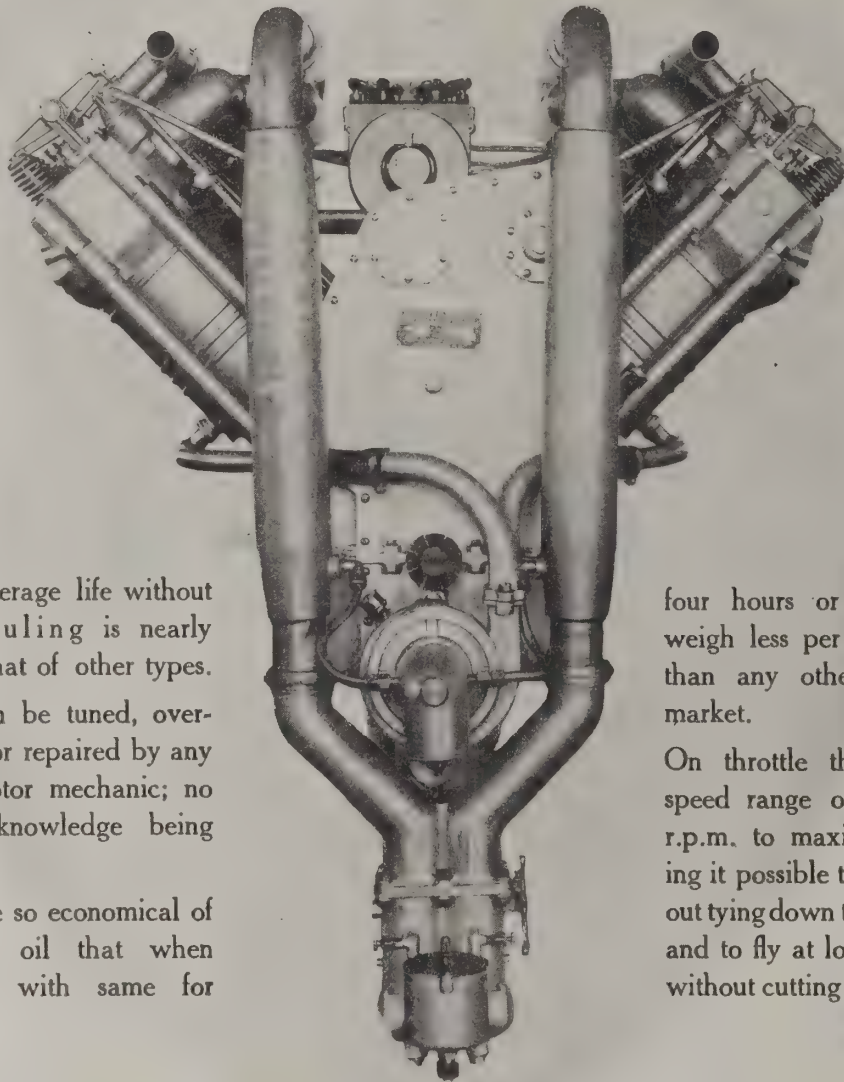
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Their average life without overhauling is nearly double that of other types.

They can be tuned, overhauled, or repaired by any good motor mechanic; no special knowledge being required.

They are so economical of fuel and oil that when provided with same for

four hours or more they weigh less per horsepower than any others on the market.

On throttle they have a speed range of from 200 r.p.m. to maximum, making it possible to start without tying down the machine, and to fly at lowest speeds without cutting out ignition.

### TWO STANDARD SIZES:

MODEL "O-X" 90-100 H. P.

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OF THE  
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0 APR 1915

# AERIAL AGE

## WEEKLY

Vol. I. No. 4.

APRIL 12, 1915

10 CENTS A COPY



*One of the latest Wright Military biplanes supplied to one of the Mexican factions*



# Curtiss Flying Boat

*February Class—Curtiss Aviation School  
San Diego, California*



THE Flying Boat in this picture has been in the air 500 hours, traveling 30,000 miles. In this boat hundreds of passengers have been carried and dozens of persons have learned to fly. There have been no accidents nor repairs. This machine is equipped with the newly developed and very efficient single-acting aileron system for lateral balance.

The Curtiss Flying Boat has made flying a safe sport.

**Military Aeroplanes of both Tractor  
and Pusher types for land and water**

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HUNTINGTON TRACTOR BI-PLANE

GYRO-"DUPLEX" MOTOR  
(7 Cylinder)



# Gyro-"Duplex" Motor

ADOPTED BY LEADING CONSTRUCTORS

110 H.P. Gyro, 9 cylinders, weight 270 pounds

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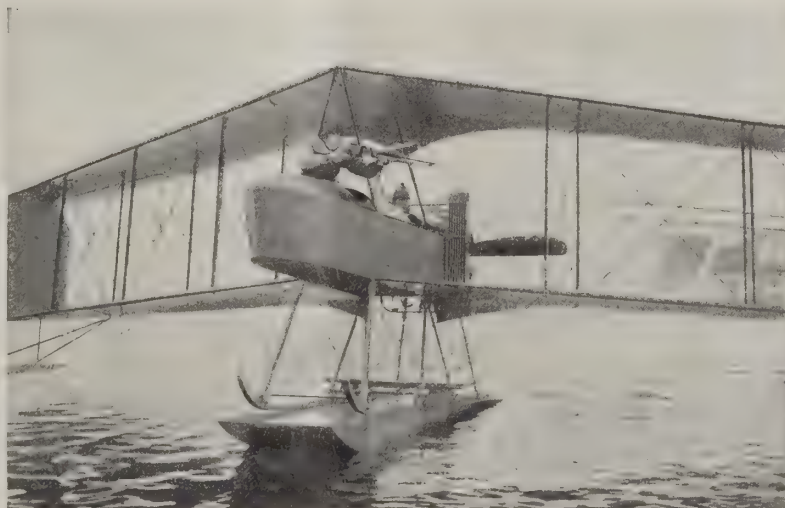
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Furnished to  
United States  
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Self-Balancing  
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Form of wing gives  
an unprecedented arc  
of fire and range of  
observation.



Par excellence  
the weight &  
gun-carrying  
Aeroplane of  
the world.

Tail-less and  
Folding Enclosed  
Nacelle with  
Armored Cockpit

SPEED RANGE,  
40-80 miles per hour.  
CLIMB, 400 feet per  
minute.

*Burgess-Dunne convertible land and marine type as furnished the U. S. Army*

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# Wright Aeroplanes

FOR SPORT, EXHIBITION OR MILITARY USE,  
OVER LAND OR WATER now embody the improve-  
ments that have been suggested by the experiments,  
conducted during the past ten years



*The New Wright Model "HS"*  
*MILITARY FLYER*

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## THE WRIGHT COMPANY

(The Wright Patents)

Dayton, Ohio

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# The National Flying Competition

To Start Independence Day (July 4th) and End Columbus Day (October 12th)

A STUPENDOUS national aeroplane competition to begin on Independence Day, July 4th, and to last until and including Columbus Day, October 12th, is being arranged by the Aero Club of America with the co-operation of the Affiliated Aero Clubs, and automobile clubs, civic, military, educational and sporting organizations of the United States.

It is the most extensive and far-reaching aeronautical project undertaken so far, and whereas it is undertaken by disinterested organizations who include in their membership the leading sportsmen, business men, military and scientific authorities of the country, and have unlimited resources, its success is assured.

## Between \$50,000 and \$100,000 in Prizes.

The purposes of the competition are to assist the War and Navy Departments in developing aviation corps for the National Guard and Naval Militia, to demonstrate for the Post Office Department the practicability of carrying mail by aeroplane to hundreds of places so isolated that it now takes days to deliver mail that could be delivered by aeroplane in a few hours, to develop the sport and demonstrate the practicability of the aeroplane for general use.

When the Navy Department sent out its recent letter to the Commanders of the Naval Militia asking them to organize aviation corps it was found that there were few experienced men available. The Army and Navy have but a handful of air pilots. These facts moved the Club to the decision to hold a series of contests to arouse interest and train aviators for flying across country over long distances.

By holding such a competition it is expected to create sufficient interest to attract young men who will make suitable aviators for the National Guard and Naval Militia, as well as to introduce the use of aeroplanes for mail carrying in the localities where the aeroplane by flying over mountains, canyons, and other obstacles, can deliver mail in a few hours, where it requires days with other means of transportation. There are hundreds of such places and the employment of aeroplanes for mail carrying will train hundreds of aviators who will then constitute, if necessary, an aeronautical reserve.

The proposed competition is to be a competition for the greatest distance covered in ten hours during the 101 days. Any or all the aviators may start each day from any or all of the official aerodromes and stations to be designated in different parts of the United States but must fly to or towards another of the official aerodromes or stations in the case of water aeroplanes. The distance covered will be measured in straight line. The aviators making the best records during the period of the competition will be awarded prizes which will include a special daily prize of \$100—or its equivalent in silver plate—which will be awarded to the aviator holding the record at the end of each day. At the end of the competition prizes will be awarded not only for the greatest distances covered, but also for the greatest number of miles covered by any aviator during the ninety days, either with a land or water flying machine; the best demonstration of the practicability of mail carrying in an aeroplane; the best aeroplane in the competition, considered from the standpoint of finish of construction of the machine and comfort afforded the passenger; the best schedule record, judged by the number of times the aviator reaches previously designated places on time; the best demonstration given by an

aeroplane equipped with an automatic stabilizer, and other similar definite purposes intended to promote practical developments.

The prizes will be contributed by the members of the Aero Club and its affiliated bodies, including the aero clubs of California, New England, Ohio, Washington, D. C.; St. Louis, Buffalo, Pittsfield, Dayton, Kansas City, Illinois, Peoria, Detroit, Milwaukee, Topeka, San Francisco, Cincinnati, Connecticut, Rochester, Pennsylvania, Harvard, Baltimore and Havana.

The prizes may aggregate to over \$100,000. Letters have been sent by the officers to six hundred members of the Aero Club of America asking for contributions to the fund. Cities will be asked to co-operate and to offer inducements to arouse local interest in aviation. Cities that have been spending between \$10,000 to \$50,000 for Independence Day celebration will be asked to offer their prizes in connection with the competition.

When the decision to hold the contest was announced at the Aero Club there was much enthusiasm, and \$1,000 was immediately subscribed by Alan R. Hawley, president; Henry Woodhouse, F. H. Russell, K. M. Turner, A. Leo Stevens, Howard Huntington, Edgar M. Berliner, Walter H. Phipps, John D. Cooper and Harold H. Brown.

The trophy and \$5,000 offered by Mr. Glenn N. Curtiss, while being a separate proposition, will also be competed for during the national competition.

Rules for the competition are being prepared by the Contest Committee of the Aero Club of America. The official landing places will be selected after the recommendations of the affiliated aero clubs and automobile clubs co-operating in different states have been received.

To carry the competition into every state the Contest Committee of the Aero Club has outlined three main transcontinental routes. Every aviator in America will be able to reach one of these routes at some point by a cross country flight of moderate length. The Contest Committee believes that there will be many aviators who in flying for the day cross country prizes of \$100 a day will find themselves on the way across the continent in pursuit of this aim, and who will then find it to their advantage to keep on in an effort to gain a sea to sea prize, which may be offered.

For water flying it is proposed to establish a distance prize. Starting and landing places for water aeroplanes will be located on the Atlantic, Pacific, and Gulf Coasts as well as on the Great Lakes. The stations on the Atlantic will include Portland, Me.; Boston, Mass.; Newport, Providence, New Haven, Bridgeport, New York, Atlantic City, Wilmington, Del.; Norfolk, Charleston and Savannah.

Every Naval Militia station on all coasts will be made a landing and starting station and every effort will be made to interest yachtsmen, and to make every yacht club a station where pilots of flying boats and hydroaeroplanes will get gasoline and supplies during the contest.

The entire plan makes it possible for the aviator to start from wherever he is located, if it is an official field, and be in the competition without undergoing the usual expense of transporting the aeroplane to a starting point. The large number of prizes for different purposes will insure prizes for many aviators. The competition being for the practical development of aviation only normal flying will be encouraged.

## ORGANIZING COMMITTEE

The following standing committees of the Aero Club of America have charge of the preliminary work of organization:

### Contest Committee

ALAN R. HAWLEY, Chairman  
J. C. McCoy  
CHARLES M. MANLY  
W. REDMOND CROSS  
HENRY A. WISE WOOD  
LIEUT.-COL. SAMUEL REBER, U. S. A.  
HOWARD HUNTINGTON  
HENRY WOODHOUSE

### Affiliated Clubs Committee

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HENRY L. E. JOHNSON  
CHARLES J. GLIDDEN  
CHARLES DICKINSON  
ALBERT B. LAMBERT  
JAMES ELVERSON, JR.  
ROY D. CHAPIN  
J. WESLEY BOVEE

A. M. WELCH  
JOHN C. EBERHARDT  
GUY T. SLAUGHTER

### Military and Naval Aviation Committee

CORNELIUS VANDERBILT, Chairman  
BRIG.-GEN. ROBERT K. EVANS, U. S. A.  
LIEUT.-COL. SAMUEL REBER, U. S. A.  
CAPT. A. S. COWAN, U. S. A.  
CAPT. MARK L. BRISTOL, U. S. N.  
LIEUT.-COMM. H. E. MUSTIN, U. S. N.  
MAJOR F. L. V. HOPPIN  
MAJOR CHARLES ELLIOTT WARREN  
LIEUT.-COL. C. DE W. WILLCOX, U. S. A.

### Marine Flying Committee

J. STUART BLACKTON, Chairman  
VINCENT ASTOR  
RODMAN WANAMAKER  
HENRY A. WISE WOOD  
ROBERT J. COLLIER  
HAROLD F. MCCORMICK

HENRY WOODHOUSE  
CAPTAIN MARK L. BRISTOL, U. S. N.

### Aeronautical Map and Landing Places Committee

REAR ADMIRAL ROBERT E. PEARY, Chr'mn  
ARCHER M. HUNTINGTON, Vice-Chairman  
BION J. ARNOLD  
A. G. BATCHELDER  
AUGUST BELMONT  
JAMES GORDON BENNETT  
CORTLANDT F. BISHOP  
J. STUART BLACKTON  
CAPT. MARK L. BRISTOL  
In Charge of the United States Naval Aviation Corps  
EDGAR BEECHER BRONSON  
W. STARLING BURGESS  
PRESIDENT MANUEL ESTRADA CABRERA  
Of Guatemala  
CAPT. W. I. CHAMBERS, U. S. N.

(Continued on page 83)





## The Gallaudet Military Machines

By Walter H. Phipps

Amongst the most interesting types of machines, which have yet been produced in this country both from the standpoint of design and construction, are the new Gallaudet Military Tractors.

Certain features which are considered of fundamental importance are incorporated in all the designs. The center of propulsion is made as nearly as possible coincident with the center of resistance, and the center of lift is made coincident with the center of gravity. The shape and position of the wings, particularly at their ends, is such that the machines are inherently stable, banking themselves on turns, and righting themselves against disturbing influences. All parts are given stream line form wherever possible, and head resistance has been eliminated in every possible manner. The same characteristics which are considered so important on the tractors are incorporated in the design of the new pusher and double engined types.

The standard type of torpedo shape fuselage is retained in both pusher types, the War Plane and the Destroyer. In the Destroyer type with two engines, cone clutches permit the use of either engine, or both as desired.

### Fuselage

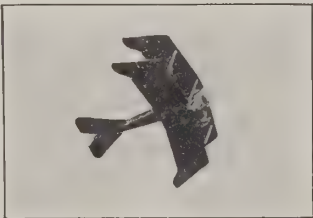
The fuselage is of torpedo form, circular in cross section, and made of three-ply mahogany veneer, or of Aero Metal plate.

### Wings

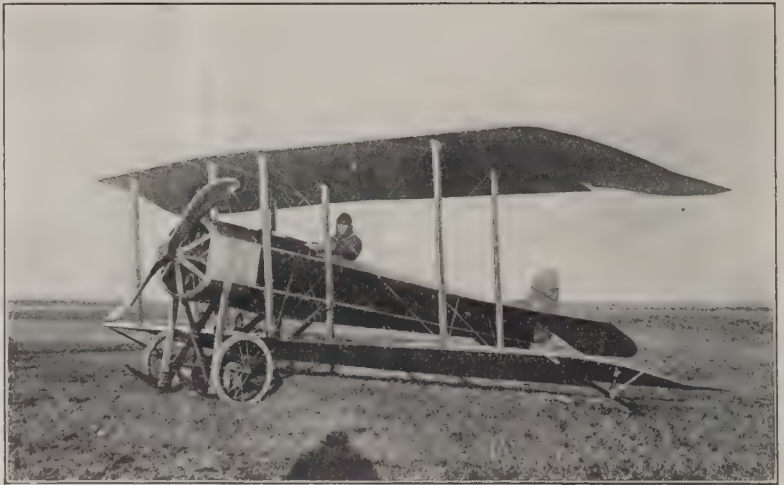
The wings are built up in the ordinary manner, with ribs made of spruce battens nailed and cemented to white-wood veneer webs, assembled on four spars, two main spars of seamless steel tubing, and two auxiliary spars or joists of spruce. This construction gives such great strength and stiffness that fewer queen posts are needed between wings, and head resistance is considerably reduced. The wings are well trussed inside, and covered with unbleached linen, filled and tightened with Gallaudet aero varnish, and surfaced with best yacht varnish. The cloth is fastened to the ribs above and below by small screws and washers.

### Posts

The queen posts between the wings are of spruce, cut to steam line section, capped at both ends with bronze heads, and are interchangeable. Posts connecting wings to fuselage and the front legs are of ash. The skids are of ash and spruce laminated.



The Gallaudet tractor in the air and on the ground.



P. C. Millman at the wheel of the 100 h. p. Gnome motored Gallaudet tractor.

### Running Gear

The running gear consists of stout wire wheels with plain clincher rims and standard automobile tires, mounted on a nickel steel axle riding in bronze shoes suspended on rubber springs. The tail skid is hickory reinforced with seamless steel tubing, pivoted at the bottom of the fuselage at the extreme tail, and relieved by stout rubber springs at its upper end inside the fuselage. Light skids of hickory are also fitted to the tips of the lower wings to protect them in bad landings.

### Controls

Consist of the Deperdussin wheel and foot bar type. Ailerons are rigged to pull up only, and bell cranks are used instead of pulleys.

### Stays

Consist of stranded plow-steel cable with steel turnbuckles.

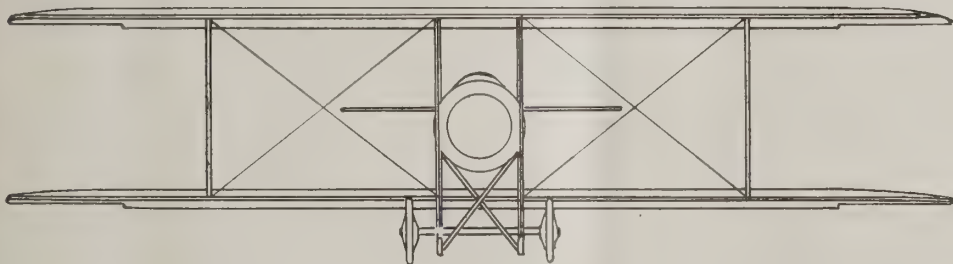
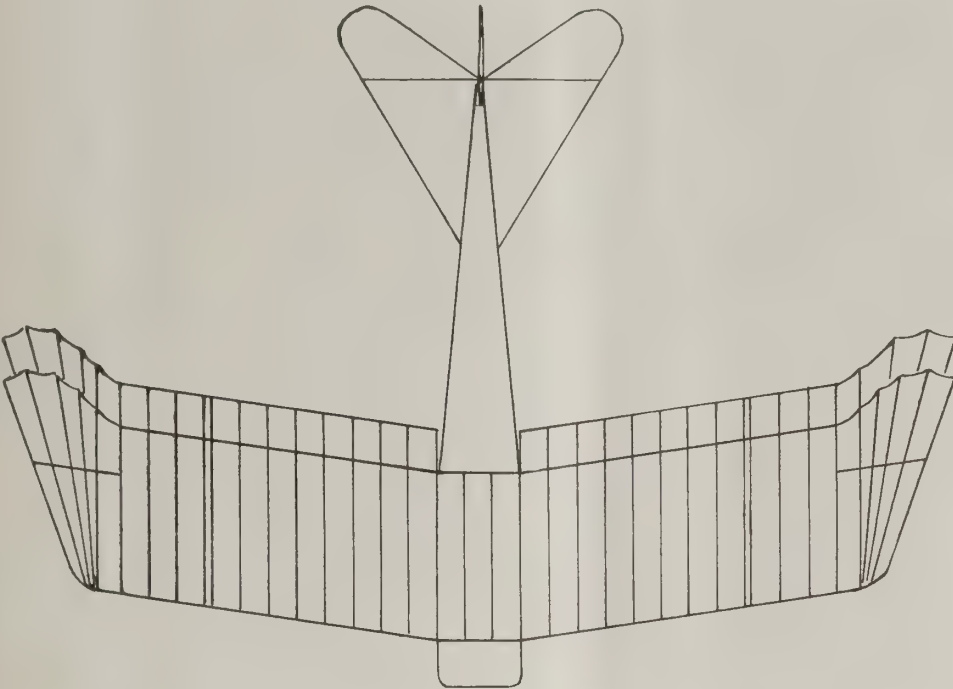
### Pontoons

Pontoons of mahogany or of Aero Metal plate can be fitted so that all types may be used as seaplanes.

Type	Tabloid	Scout	War-Plane	Destroyer
Propeller	Tractor	Tractor	Pusher	Pusher
Spread	24'	30'	36'	40'
Chord	4' 6"	6'	7'	7'
Area	170 sq.'	300 sq.'	434 sq.'	490 sq.'
Length	20'	25'	28'	28'
Seats	One	Two	Two	Three
Engine	90 Gyro	110 Gyro	140 HP. Sturtevant	Two 140 HP. Sturtevant
Speed (max)	101 mph	90	85	103
Speed (min)	50 mph	40	40	50
Fuel & oil cap.	4 hours	4 hours	4 hours	4 hrs., 2 Eng. 8 hrs., 1 Eng.
Weights:				
Empty	750 lbs.	950 lbs.	1380 lbs.	2150 lbs.
Fuel & outfit	200 lbs.	250 lbs.	320 lbs.	650 lbs.
Men & outfit	210 lbs.	450 lbs.	500 lbs.	725 lbs.
Total	1160 lbs.	1650 lbs.	2200 lbs.	3525 lbs.

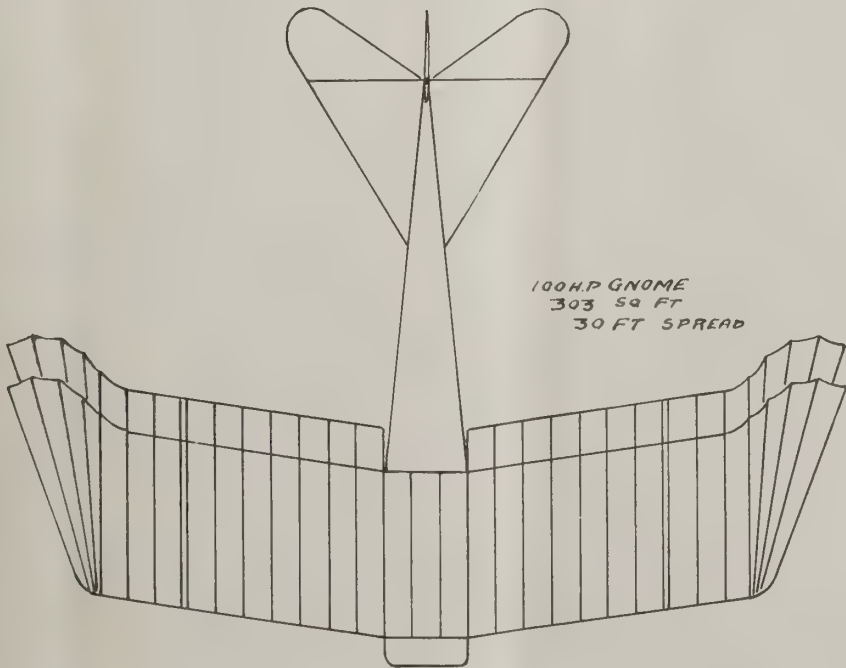


Scale drawings of the 90 and 100 h. p. Gallaudet Military Tractors



90 H.P. GYRO  
34 FT. SPREAD  
351 SQ. FT.

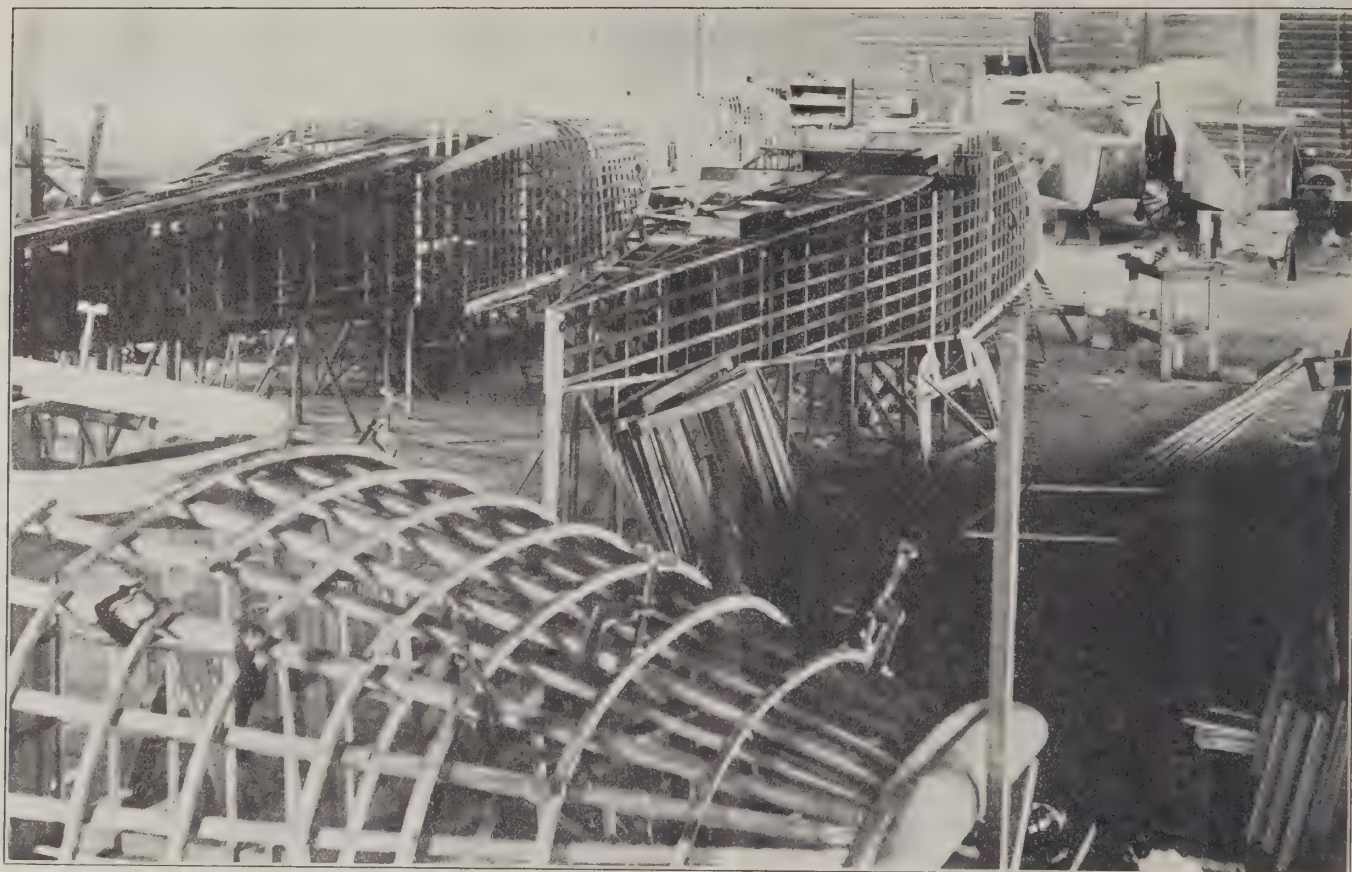
THE GALLAUDET  
BIPLANES



100 H.P. GNOME  
303 SQ. FT.  
30 FT. SPREAD



## Views of the Busy Curtiss Plant at Buffalo



*One of the assembling rooms where the new 160 H. P. flying boats are constructed for foreign governments  
Eight frames of hulls of flying boats are shown in the picture*



*View of the Wing Construction Department of the Curtiss Company at Buffalo*



# The Fuel Problem\*

By Neil MacCoull, M. E.

AVIATION has now developed to such an extent that the only serious limitation to extended flight is the weight of the fuel which must be carried. In the case of the Rodman Wanamaker trans-Atlantic flyer, which weighs about 5,000 pounds complete, the 300 gallons of gasoline required for a flight of some 35 hours, will weigh about 1,800 pounds. The difficulty experienced in lifting this weight has caused the cry for a lighter fuel. It needs no argument to prove the value of a fuel which would extend the flying radius while decreasing the load carried.

In an editorial of the July 1914 issue of *Flying*, the use of an high explosive was suggested as a solution to this problem. A large number of people hold this idea, but the excellent reply by Hudson Maxim in the August issue points out the fallacy of this method of attack.

"An explosive substance like a high explosive or smokeless powder combines within itself both the fuel and the oxygen for its own combustion; hence it is a fuel in which the combustible is chemically combined with oxygen, and is consequently a much more expensive fuel than gasoline or anything now used in internal combustion engines. The oxygen contained in an explosive cannot be compared in cheapness with atmospheric oxygen, which does not cost anything. Now as the oxygen necessary to burn a fuel weighs several times as much as does the fuel, the necessary quantity of fuel for an aeroplane trip would weigh very many times as much if an explosive material were used than if gasoline were adhered to, while the expense would be prohibitive."

The problem in hand, of course, is to get the greatest energy out of one pound of fuel, not combustible mixture.

Examination of the thermal properties of various combustibles shows that there is no liquid fuel known which has more energy per pound than gasoline, and no combustible whatever which has more than a few per cent. more energy, except hydrogen.

Unfortunately it is impractical, at present, to use hydrogen—so gasoline will undoubtedly continue to be the lightest fuel for

aeroplanes for some time to come. Hence the only way to reduce the weight of the fuel carried is to reduce the quantity by increasing the efficiency of the engine.

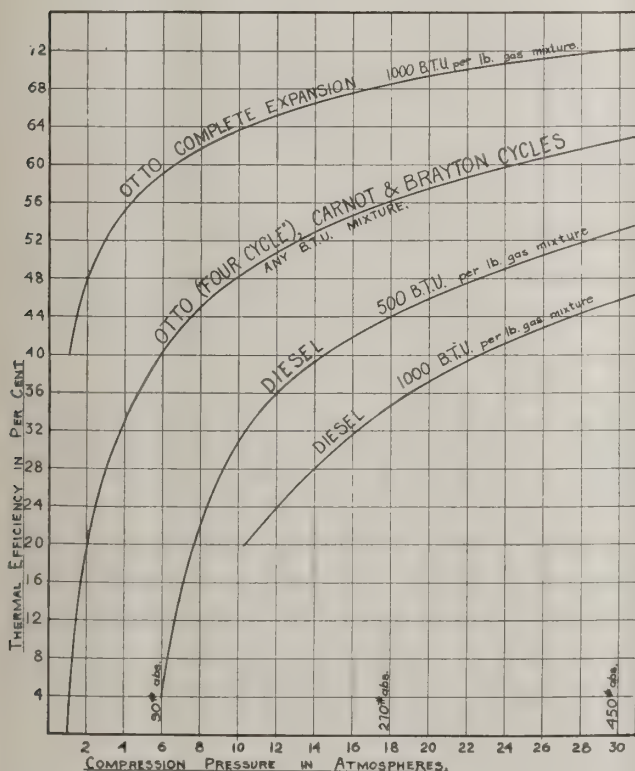
The accompanying curves, taken from Dr. Lucke's "Engineering Thermodynamics," shows graphically how the efficiency of the best gas cycles varies with compression.

At present the only reason why the compression of a gasoline engine is limited to about 100 pounds is that the temperature of the mixture as it is compressed, rises so rapidly that it would pre-ignite were a pressure much higher than this used. It must be remembered that the temperature of the mixture before compression is not that of the atmosphere, but from 200° F. to 300° F. higher on account of contact with the hot cylinder walls and the exhaust gases in the combustion chamber. It might be remarked here that the chief reason for the high efficiency of the Diesel engine is the very high compression used, often 500 pounds. A glance at the curves will show that at any given compression the Otto cycle will be more efficient than the Diesel. The actual efficiency of an engine is almost invariably from 40% to 50% of the ideal shown on these curves, for reasons that are still the subject of dispute. Whatever the reason may be, this percentage of the ideal is so nearly constant for any cycles that it is possible to compare the actual results that will probably be found from experiment, by comparing the ideal efficiencies and multiplying by this factor.

Since the temperature rise caused by compression is dependent only on the ratio of the pressures before and after compression, it would be possible to get unlimited compression pressure by supplying the carburetor with pre-compressed air whose temperature had been reduced near to that of the atmosphere. In this case a pre-compression to 60 pounds gauge would allow of a compression to about 500 pounds without danger of preignition. This would increase the ideal efficiency of the engine to 40% or 60%, an actual increase of about 50%, but it would add the weight of the external compressor. In this field a good turbine compressor, with its light weight, would be of great value.

One frequently hears of attempts to use all the pressure caused by combustion, down to atmosphere by means of compounding instead of exhausting when the pressure is close to 50 pounds, as is now done. The idea has been to pass this exhaust into another cylinder and get work from it until the pressure has dropped to atmosphere. This should raise the efficiency, as shown in the curves, from the value of the Otto cycle to that of the complete expansion Otto. These attempts, however, have not been successful commercially because of the increased cooling surface, friction and weight of the low pressure cylinders. A far better method would be to allow this complete expansion cycle to occur in one cylinder. This could be done by so timing the valves, or throttling the intake, that there would be a smaller volume of gas in the cylinder at the beginning of compression than at the end of expansion, in other words starting compression after the piston has traveled about 70% of the compression stroke. It would be necessary, of course, to change the cylinder clearance so as to maintain the proper compression ratio with the smaller volume of gas. This "compounding" will raise the efficiency and hence reduce the fuel consumption and also eliminate the noise of exhaust, though the reduction of the charge in the cylinder will reduce the power for a given engine weight.

Probably the most practical way of working out the idea of "compounding" would be to start the compression at 30% or 50% of the compression stroke, which would not give expansion to atmosphere, but to about 30 and 18 pounds respectively, and would increase the efficiency about 17% in one case, and 28% in the other.



\*Abstract from "FLYING," April, 1915



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PUBLISHED WEEKLY BY THE AERIAL AGE COMPANY, Inc., 116 West 32nd Street, New York City

Entered as Second-Class Matter March 25, 1915, at the Post Office at New York, N. Y., under the Act of March 3, 1879

VOL. I.

NEW YORK, APRIL 12, 1915

No. 4

## Boston Transcript Supports Objection to Navy Constructing Aircraft

THE objection to the navy constructing aircraft, which has been voiced in editorials in *Aerial Age* for March 22nd, March 29th, and April 5th is also supported by the Boston *Transcript*. In its March 27th issue we read:

"The first number of the *Aerial Age*, the new weekly published in New York, promises to fill a long-felt want in American aeronautics. Thus far there has been no weekly of its scope brought out in this country, and while the monthly magazines occupy an important field they are so limited as to space as to be unable to cover as fully as desirable many interesting developments in the aerial world which are taking place to-day.

"One feature of the current issue which must be especially commended is the attitude taken editorially on the navy's proposal to establish aeroplane factories at New York and Philadelphia. It may safely be stated that there is to-day not more than one, if any, aeroplane concern in the country which is doing business on a paying basis. And in order to get the best results the aid of private constructors is absolutely essential.

"Especially would this be the case were the United States obliged to participate in a great war. Under such conditions the blotting out of private industry would prove suicidal, for the reason that every possible resource would necessarily be strained to produce the machines needed to repair the wastage of war, even supposing the army and navy to have been sufficiently equipped at the start, a state of affairs which is never likely to occur.

"There is a legitimate place for Government activity in aeronautics, but it does not lie, it seems to the writer, in active competition with private industry. Extensive laboratories, established and run by the army and navy or both in combination, would result in great gains, not only to the two branches of the service, but to the development of the aeroplane generally. Then, having ascertained the types of aircraft desired, the departments could call for bids for machines on designs submitted to the private constructors, and guaranteed to come up to the specifications, just as is the case with the construction of warships. In that way not only the two services, but the industry at large would benefit."

## President Appoints Advisory Board

THE Advisory Board provided for in the Naval Bill was appointed on April 2d, by President Wilson. The committee appointed by the President is composed of Brig. Gen. George P. Scriven, Chief Signal Officer, U. S. A.; Lieut. Col. Samuel Reber, Aviation Section of the Army Signal Corps; Capt. Mark L. Bristol, U. S. A., in charge of the Naval Aeronautic Service; Naval Constructor Holden C. Richardson, U. S. N.; Dr. Charles D. Walcott, Secretary of the Smithsonian Institution; Charles F. Marvin, Chief of the Weather Bureau; Dr. S. W. Stratton, Chief of the Bureau of Standards; Byron R. Newton, Assistant Secretary of the Treasury; Professor W. F. Durand of Leland Stanford University; Professor Michael I. Pupin of Columbia University; Professor John F. Hayford of the College of Engineering, Northwestern University, and Professor Joseph S. Ames of Johns Hopkins University.

It is a very substantial committee indeed. The members of the Washington departments included are able men, competent in every way. The five civilian members represent institutions of learning that have not yet given intimation of interest in aeronautics. The President's action will undoubtedly result in

the establishment of special courses in aeronautics, and that in itself will be a long stride forward.

The provision for this committee in the Naval Bill reads as follows:

An Advisory Committee for Aeronautics is hereby established, and the President is authorized to appoint not to exceed twelve members, to consist of two members from the War Department, from the office in charge of military aeronautics; two members from the Navy Department, from the office in charge of naval aeronautics; a representative each of the Smithsonian Institution, of the United States Weather Bureau, and of the United States Bureau of Standards; together with not more than five additional persons who shall be acquainted with the needs of aeronautical science, either civil or military, or skilled in aeronautical engineering or its allied sciences: *Provided*, That the members of the Advisory Committee for Aeronautics, as such, shall serve without compensation: *Provided further*, That it shall be the duty of the Advisory Committee for Aeronautics to supervise and direct the scientific study of the problems of flight, with a view to their practical solution, and to determine the problems which should be experimentally attacked, and to discuss their solution and their application to practical questions. In the event of a laboratory or laboratories, either in whole or in part, being placed under the direction of the committee, the committee may direct and conduct research and experiment in aeronautics in such laboratory or laboratories: *And provided further*, That rules and regulations for the conduct of the work of the committee shall be formulated, by the committee and approved by the President.

That the sum of \$5,000 a year, or so much thereof as may be necessary, for five years is hereby appropriated, out of any money in the treasury not otherwise appropriated, to be immediately available, for experimental work and investigations undertaken by the committee, clerical expenses and supplies, and necessary expenses of members of the committee in going to, returning from, and while attending, meetings of the committee: *Provided*, That an annual report to the Congress shall be submitted through the President, including an itemized statement of expenditures.

We wish the Board success.

## Aero Club Will Furnish the Air

MAYOR MITCHELL has written to Secretary Daniels pledging New York to furnish the water if the nation will supply the ships for a naval review.—The *New York Sun*.

The Governors of the Aero Club of America pledge the Club to furnish the air—an entertainment for the aviators—if the naval aviation corps participate in the review.

## Aviation Travel Grows

Editorial from Paducah (Ky.) News Democrat

AVIATION, through the war in Europe, has been made a permanency much earlier than might have otherwise been the case. The "flying machines" availability is well established. A little later on these machines will have been as have been the motor boat and the automobile, made almost perfect. Then, as is already the sign, aerial travel, by the end of another decade, may be as familiar to observation as the flight of pigeons. The time is coming when more people will own air machines and use them on all sorts of ordinary journeys than now own and use road machines. If this should look like a wild

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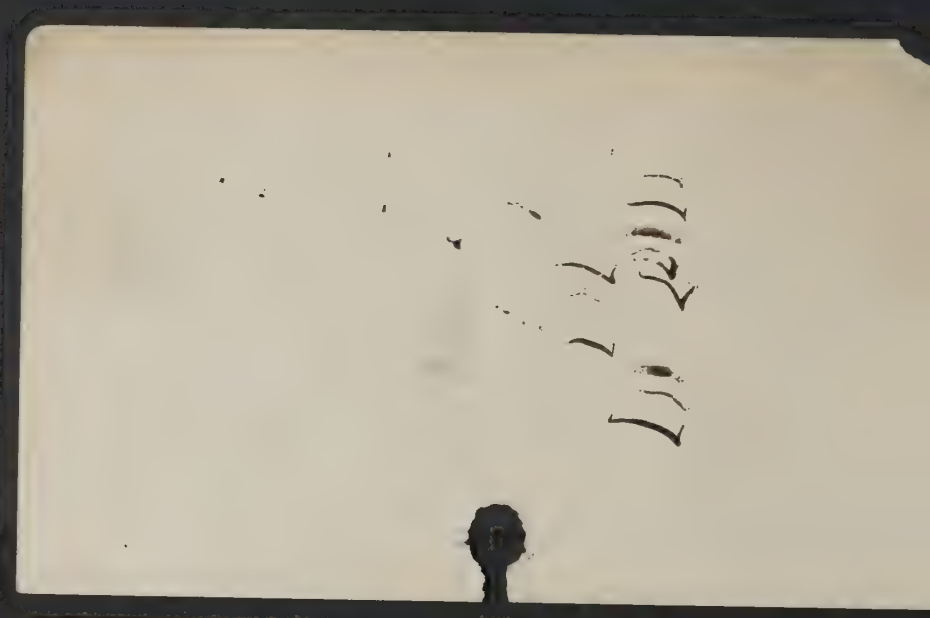
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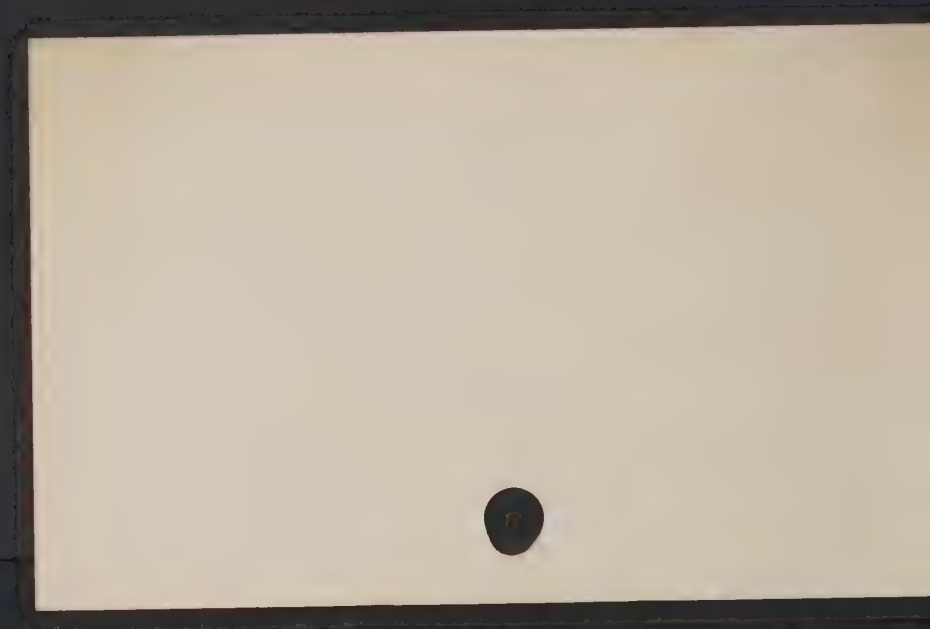
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Ceased publication with vol. 16, no. 7.

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prophesy, think how few automobiles there were in use twenty years ago and how many there are now. And as to motor-boats, consider how few there were even ten years ago, and how they have increased from a few to hundreds of thousands within that period.

As to safety in flying, there is reason for the belief that the danger will soon be reduced to a degree not greater and perhaps not as great as the danger in twenty-mile-an-hour automobile travel.

Flying, as a human art, is but in its beginnings. The development of the art is progressing with amazing rapidity. Accidents are becoming rarer. Aeroplanes are now almost as responsive to the will of the pilots as automobiles to the twist of the steering crank.

## Safest Place for Soldier in An Aeroplane

*From Popular Mechanics*

**I**S an aeroplane the safest place for a soldier in war? The English newspapers recently reported that an officer of the Royal Flying Corps had applied to be allowed to rejoin his regiment in his former capacity. When inquiry was made as to his reasons he replied that he could not bear to see his

brother officers running all the risks of the trenches while he himself was in safety flying in the air above them. Similar remarks by other British military airmen, all of whom seem to regard their work as much less hazardous than that of the fighting man on the ground, have lent interest to reports of the surprisingly small number of casualties suffered by flyers since the war began.

When the Royal Flying Corps was organized, in 1912, it was estimated that in case of war the entire personnel would have to be renewed every six months—that that period would represent the average life of an airman in active service. In the first five months of the present war, however, during which the entire corps was almost continuously engaged in scouting and raiding expeditions, the total loss was six airmen killed by the enemy, five killed accidentally, five wounded, and five missing or prisoners: a total disablement of less than three per cent. of the airmen in active service. While no exact figures, either of losses or of the number of troops engaged in the field have been made public by any of the powers engaged in the war, it is certain that the percentage of losses in land fighting, both of officers and enlisted men, has been very much larger than this in each of the armies.

All of which seems to answer in the affirmative the question with which this article began.

## National Flying Competition

*(Continued from Page 77)*

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ELMER A. SPERRY  
JOSEPH A. STEINMETZ  
W. L. SUYDAM, JR.  
W. IRVING TWOMBLY  
CORNELIUS VANDERBILT  
LOGAN A. VILAS  
HICKS A. WEATHERBEE  
E. JANSEN WENDELL  
H. P. WHITNEY  
HUGH L. WILLOUGHBY  
G. F. CAMPBELL WOOD  
HENRY WOODHOUSE  
ORVILLE WRIGHT  
CLARENCE P. WYNNE  
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RALPH PULTIZER  
CHARLES JEROME EDWARDS  
JAMES GORDON BENNETT

Communications regarding this competition should be addressed to The Contest Committee, Aero Club of America, 297 Madison Avenue, New York City.





### Plans New Flying School

Washington.—General Scriven, chief signal officer, just back from an inspection trip to the army aviation school at San Diego, Cal., has plans for the acquisition of a new site on San Diego Bay for the school.

The present site, on an island in the harbor, is soon to be vacated and the signal corps expects to develop a new plant on the mainland which will meet the needs of the service for some years to come.

### Florida Senator Takes a Trip in Naval Aeroplane

Pensacola.—Senator Nathan P. Bryan, ranking member of the naval affairs committee in the United States Senate, was taken up by one of the pilots stationed at the naval aeronautical school. Senator Bryan is in Pensacola on a visit and while at the navy yard accepted an opportunity to take a fifteen minutes' sail through the air. He declared that he enjoyed the sensation greatly.

In an address before the Rotary Club of which he was a guest, Senator Bryan declared that as the ranking committee of the Senate Naval Affairs Committee, he will do all in his power to have the Pensacola Navy Yard restored to its former usefulness.

### Cleveland Opens School of Aeronautics

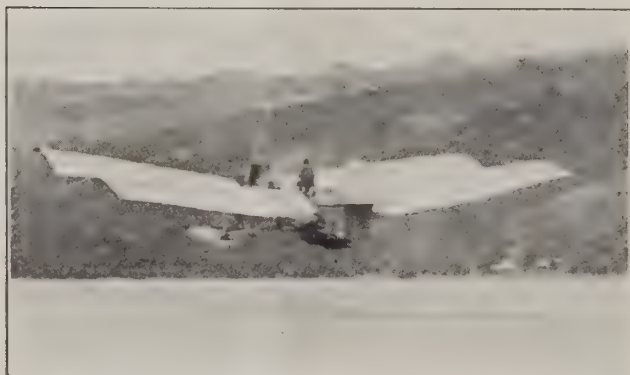
Cleveland's new school in aeronautics, with regular Monday sessions at 8:15 p. m., opened on March 22nd, at the Ohio Naval Militia armory, Carnegie Ave., S. E. and E. 36th St.

Dr. H. A. Young of the Wright Aeroplane Co. delivered the opening lecture and illustrated his talk with lantern slides showing the progress of aviation.

The purpose of the school, which will be conducted by Harvey R. Kidney, 1236 E. 111th St., formerly with the Curtiss Aeroplane Co., Hammondsport, N. Y., is to develop men in the science and art of flying. An aeronautical division of the naval militia will later be formed with such men as show aptitude.



*The Langley Aerodrome after leaving the water on Lake Keuka*



*The Aerodrome in Flight*

### Mysterious Flyer Over Canal

The military and Canal authorities are investigating a report reaching headquarters from officers of the Lock Guard that an aeroplane has been seen flying over the Pedro Miguel and the Miraflores locks.

Major General George W. Goethals, Governor of the Canal Zone, and Brigadier General Clarence B. Edwards, Commander of the United States forces in the Isthmus, both detailed men to make a search for the machine, which was said to have been seen and heard over the locks last night. The aircraft is also reported to have flown over Hill 15, which is heavily intrenched and situated to the east of the Pedro Miguel locks.

It is known that a Bleriot machine is owned on the Isthmus, but its whereabouts has not yet been ascertained.

### Regarding World and American Records

We published in past numbers the world and American records. The world records only includes those that were homologated by the International Aeronautical Federation, and these do not include the extraordinary record of 24 hours 12 minutes without stopping made by Reinhold Boehm on July 11th, 1914; nor the altitude record of 26,246 feet made by Heinrich Oelerich made on July 14th, 1914. These two records were to come up for homologation at the August meeting of the International Aeronautical Federation, which was prevented by the war. As these records were verified by the Imperial Aero Club of Germany they may be accepted as being official.

The American records do not include the remarkable records of Lieutenant Byron Q. Jones, U. S. A., the one of 8 hours 53 minutes continuous flying for pilot alone made on January 14th, 1915, and that of duration for pilot and passenger of 7 hours and 5 minutes established on March 12th, 1915. These records have not yet been homologated, but as they were officially timed by representatives of the U. S. Army and the Aero Club of America there is no doubt that they will stand.

### Charles B. Kirkham, Curtiss's Chief Engineer

Charles B. Kirkham, the aeronautical motor expert, who has been identified with the aviation industry since 1910, is now connected with the Curtiss Motor Company at Hammondsport, N. Y., as chief engineer.

### Has Chance to Be Russian Aviator

Arthur Smith, the Fort Wayne, Indiana, aviator, who has achieved fame through his flights in various sections of the country, has received a telegram offering him a place as an aviator with the Russian army. Smith probably will not accept. He has under consideration a contract to take the place of Lincoln Beachey on the Panama-Pacific Exposition program.

### Golf Umpire in Aeroplane

Ormond Beach, Florida, March 25.—J. M. Breen, a former First Lieutenant of the New York Athletic Club, dropped a golf ball and a message from an aeroplane 1,000 feet above the Seabreeze links today to notify four Metropolitan golfers that he was on hand to referee their match. He had been asked to umpire as the players were not noted players nor well up upon the rules.

Breen overslept and had to fly to Seabreeze from Ormond to arrive on time. His golf ball landed on the first tee, where Messrs. Lemming, Grainger, Oneil and Jaeger were awaiting his arrival.

### Certificate Issued to Army Pilot

Aviation pilot certificate No. 317 has been issued by the Aero Club of America to Lieutenant Walter G. Kilner, U. S. A.

Lieutenant Kilner carried out his test flights at North Island, San Diego, California, using a Martin Tractor Model TT with Curtiss Model O 75 h. p. motor.

Walter L. Brock, the aviator who carried away the laurels in England last year in the London Derby, the London-Paris-London, and London-Manchester races is in Chicago waiting for developments worthy of his skill.



### Earl Daugherty Gives Fine Exhibition in His New Tractor

Flying at Long Beach on March 5th, at a height of 1,000 feet in his tractor biplane, an aeroplane of his own design, Earl Daugherty, Long Beach aviator, tested his accuracy in bomb dropping. The mark he selected as the target for his bombs of flour were the three government torpedo boat destroyers at the municipal dock. Having been forewarned of the aviator's intention, the crews of the destroyers followed Daugherty's flight with considerable interest.

The first flour bomb dropped by the aviator fell within 100 feet of one of the destroyers, while the second one was less accurate.

Considering that this was his first attempt at bomb dropping, Daugherty feels he made a fair showing, especially in view of the fact that just before he got ready to drop the bombs one of the seven cylinders of his fifty-horsepower Gnome motor began to miss.

Following his attempt to "destroy" the government's boats Daugherty flew back to the beach in front of his father's apartment house, where he landed gracefully.



### Another Sportsman Takes Up Flying

Guiding his big biplane with great skill, L. L. Formes, the San Francisco millionaire and patron of the art of flying, made a successful flight on March 20th, over Griffith Park. With Glenn Martin as passenger, Formes sent the machine into the air at 10:30 o'clock and remained up for forty minutes. He attained an altitude of 5,500 feet. Martin was cordial in his praise of the ability of his pupil. The big four-passenger plane being constructed by Glenn L. Martin in Los Angeles for Mr. Formes will be completed in three weeks' time and will be tested out at Griffith Park. This machine will embody a number of new ideas planned by its owner.

Aviation, with Mr. Formes, is not merely a rich man's fad. He first became interested in heavier-than-air machines in Chicago several years ago and made an aerial flight in that city. Early recognizing the potentialities of the aeroplane, Mr. Formes gave time and study to the art and has made several successful flights. "When you look back only a few years ago to the first automobile," says Mr. Formes, "and consider what the development of this industry meant to the economic wealth and progress of the country, you may realize what the future of aviation promises."

"What aviation in the United States needs, is men of means to lend encouragement to the art," continued Mr. Formes. "All of our present day aviators are unfortunately poor men and their need of money to carry on their investigations has unfortunately led a number of the best to perform spectacular feats in the presence of crowds, in many cases resulting in the death of men like Lincoln Beachey and others the country could ill afford to lose."

Mr. Formes is entirely practical in the aid he is giving to the development of the science. Several inventors in various parts of the country are being financed by the San Francisco millionaire in developing ideas along the lines of improvement, and he hopes to be able to give to the world at some early date the benefits of these investigations.

### Garden City Aerodrome

By P. C. Millman

In spite of the inclement weather there was considerable flying at the Garden City Aerodrome during the past week. Both Kantner in the Huntington tractor and Heinrich in the Heinrich tractor carried a number of passengers, while Millman flew the Gallaudet tractor.

On Wednesday, Captain Ernest J. Janney of the Royal Flying Corps, and Lieutenant H. G. Smith, who is associated with him in organizing a Canadian branch of the Royal Flying Corps, visited the field and made flights in both the Huntington and Heinrich machines. Both were enthusiastic over their trips and loud in their praise of the wonderful flying qualities of the latest American aeroplanes.

The Peoli Aeroplane Corporation which has taken over the Washington Aeroplane Company has just completed the first of new 140 h. p. Peoli war-planes. The machine is now at College Park, Washington, being assembled for tests, which will take place shortly.

Preparations for the establishment of an aviation school at Cooperstown, N. Y., this summer have been completed by Arthur Olsen.

Baxter Adams will give exhibition flights at Henderson, Ky., the latter part of April, afterwards flying at Hopkinsville, Paducah and other cities for which he has contracted.

Miss Ruth B. Law continues to delight thousands with her flying. She is now at Louisville, Ky., with her Wright biplane, where she is doing an extensive passenger-carrying business.



Front view of the latest Martin Military Tractor.





John Guy Gilpatric, one of the youngest and most skillful pilots in America who has the distinction of having flown a half dozen different makes of Aeroplanes including amongst them:—The new Aero-marine, the Deperdussin, the Bleriot, the Morane, the Schmitt and the Sloane.

## California News

By George B. Harrison

**A** RESOLUTION urging the Panama-Pacific Exposition company to make some definite recognition of aeronautics by the establishment of a Department of Aeronautics and the appointment of a competent Chief has been adopted by the Pacific Aero Club, of San Francisco, and forwarded to the Exposition officials. The resolution announces the belief that adequate preliminary preparation may insure an aviation meet at the Exposition with at least a limited participation by foreign flyers. The following preliminary reasons are given for the action:

"Whereas, one of the greatest of the world's developments between the opening of the Panama-Pacific International Exposition and the last prior universal exposition is the actual achievement of human flight, which has been given a public place in the world's activity since 1904;

"Whereas, the lack of exhibits of this nature is quite evident at the Exposition, being confined to the volunteer efforts of San Francisco aviators, and while extremely valuable from an historical standpoint these exhibits do not realize the purpose of a world's exposition in telling the story of flying progress."

Robert G. Fowler and Silas Christofferson are operating flying boats on the Exposition waterfront and carrying passengers. Fowler has on exhibition in the Palace of Transportation the aeroplane with which he made the trip over the Panama canal. Otherwise, the Exposition is barren of aeronautical or aviation exhibits, save a few aneroids and an aviaphone set.

A demonstration of the Turner aviaphone on the Marina or waterfront of the Panama-Pacific Exposition, is planned providing the consent of the Exposition can be secured for a number of flights showing the use of the accessory. Robert G. Fowler, who has just completed a new flying boat and has installed a landing at the Marina, has agreed to make the demonstration.

A balloon of 2,200 cubic meters capacity, belonging to Edward Unger, broke away from its moorings at Eighth and Mission streets, San Francisco, in March. It is estimated that it went up at least 35,000 feet. There were no passengers and the basket was not attached. The balloon landed at Newark, southeast from San Francisco about twenty miles and across San Francisco bay, and residents there asserted that it brought down icicles more than an inch thick.

The United States Weather Bureau has an interesting meteorological exhibit in the Palace of Agriculture at the Panama-Pacific International Exposition at San Francisco. A kite and

a high altitude balloon and a parachute are shown, together with all the instruments used in making altitude observations and as designed for that purpose by Prof. C. F. Marvin. Photographs of the Mount Weather work, cloud observations and other features of the Weather Bureau's important work are displayed. The exhibit is in charge of J. C. Alter, observer at the Salt Lake City station.

Report of Special Committee of Pacific Aero Club to investigate cause of accident to Lincoln Beachey to Mr. Guy T. Slaughter, President of the Club.

Dear Sir:

In accordance with your telephone request of Monday, March 15, 1915, we, the undersigned, constituting a special committee, investigated the cause of the fatal accident to Aviator Lincoln Beachey, March 14th, while flying at the Panama-Pacific International Exposition, and we submit the following conclusions and report:

We are convinced that Aviator Lincoln Beachey met his death by reason of collapse of his monoplane, accounted for by coming out of a vertical drop too suddenly.

It is our opinion that Mr. Beachey misjudged his speed by reason of the fact that his body and face were protected by enclosed fuselage and windshield. In all previous vertical drops he had used a Curtiss-type biplane (pusher) where he was exposed to the full force of air pressure, which aided him in judging his speed. It is thought that, due to misjudging his speed, he came down closer to the ground than he intended and then over-controlled in an effort to resume a normal line of flight before descending so low that he could not reach his landing place. The committee is of the opinion that Mr. Beachey had attained a speed of 180 miles per hour when he endeavored to resume a normal line of flight.

According to the consensus of opinion of numerous eyewitnesses, including members of your committee, Mr. Beachey made a preliminary vertical drop prior to his upside-down flight from an altitude of about 3,500 feet; it is estimated that from this altitude he made a dive of 1,000 feet before beginning the upside-down flight. It is estimated that he flew in the upside-down flight at an angle of about 45 degrees, losing about 1,500 feet in altitude before beginning the last vertical drop. The last vertical drop is estimated at 500 feet, bringing him down to within approximately 500 feet of the ground, at which point he attempted to resume normal line of flight and both wings collapsed, folding against the sides of the fuselage. Mr. Beachey's motor was running the last two-thirds of the upside-down flight, which was contrary to his usual practice, and continued to run until he struck the water.

The monoplane used by Mr. Beachey was designed by Mr. Warren Eaton, who designed the two biplanes used by Mr. Beachey during the season of 1914. The monoplane was intended for a speed of 103 miles per hour in normal flight, the factor of safety being 10 to 1 at that speed; in practice it developed a speed of 105 miles per hour. Your committee, however, figures that the plane would have been absolutely safe up to a speed of 150 m. p. h. Your committee examined the wreckage and found all control and stay wires intact, and that all materials used in the machine were well selected and the workmanship excellent. Furthermore, we find that both wings broke practically the same distance from the fuselage.

The plane struck the water between the two transport steamers "Crook" and "Logan," lying at the U. S. Army transport docks, Fort Mason, adjoining the Exposition grounds. The vessels were about 100 feet apart in water about 35 feet deep. The end of the fuselage struck a log fender floating against the side of the transport "Crook." The diving apparatus was obtained from the battleship "Oregon" in about 45 minutes; members of the crew operated the apparatus, and Seaman Graze acted as diver. After arriving on the scene the diver located the wreckage in about 15 minutes, two descents being necessary. The wreckage, with the aviator's body immeshed in it, was raised to the surface of the water and the body removed. Mr. Beachey's helmet and goggles were missing. The safety straps across his thighs had been torn from their fastenings on the right hand side by the impact. The autopsy surgeon is of the opinion that Mr. Beachey actually lost his life from drowning.

Mr. Beachey had previously executed loops in public with this monoplane, but as stated before had never either in practice or publicly attempted to do his vertical drop and upside-down flying in this machine or any other monoplane.

Your committee greatly appreciates the assistance rendered by Mr. Warren Eaton and Mr. Arthur H. Mix, Mr. Beachey's mechanician.

(Signed)

ROBERT G. FOWLER, Aviator, Chairman;  
ROY N. FRANCIS, Aviator;  
CARL T. SJOLANDER, Aviator;  
CHAS. H. PATTERSON, Aeroplane Manufacturer;  
L. S. WALLACE, Aeronautical Draftsman, and  
JAY GAGE, Aeroplane Designer and Manufacturer.



Aeroplanes Invaluable in European War Says Captain of the Royal Flying Corps

This is how Captain Ernest J. Janney, of the Royal Flying Corps, of Canada, speaking recently at the Aero Club of America, describes dodging shrapnel, when flying over the German lines:—  
"It peeves you a bit to have a shrapnel shell shot at you, even if it does happen to miss you. It's just like a man boxing your ears. You throw out everything on the beggars who have tried to bring you down."

Captain Janney is stopping at the Biltmore Hotel with Lieutenant H. G. Smith, who is also a military aviator. Captain Janney, who learned to fly under the tutelage of Bleriot, is now training recruits for the Flying Corps at Toronto. He has just returned from the war zone, and as soon as he gets thirty good men together to join the corps he will return.

"We were at Bailleul—at least that was our base. In my corps there were a dozen machines that were kept in fine condition. By our calculations only two per cent. of our men have been killed. This low percentage is chiefly due to the thorough teaching the flyers had before they went with the army and to the fact that our machines are overhauled every hundred hours.

"We fly at an average height of 5,000 feet. But of course when we want to get at something we duck down and sometimes are within 500 feet of the enemy's lines. But they have got to be sharp to get us on the wing. The aeroplane at the front has been a huge success.

"I think that so far as gathering information is concerned the aviator, if he remains about one hour in the air, can accomplish what it would take 1,000 cavalry-men to do. It's pretty exciting to see what's going on down below, then to have the whiz of shrapnel shells in your ears and know that you've got to pick out a battery of the enemy, dive down a couple of thousand feet and let go a smoke bomb. But even so, our men have proved that they can be pretty accurate with these smoke bombs.

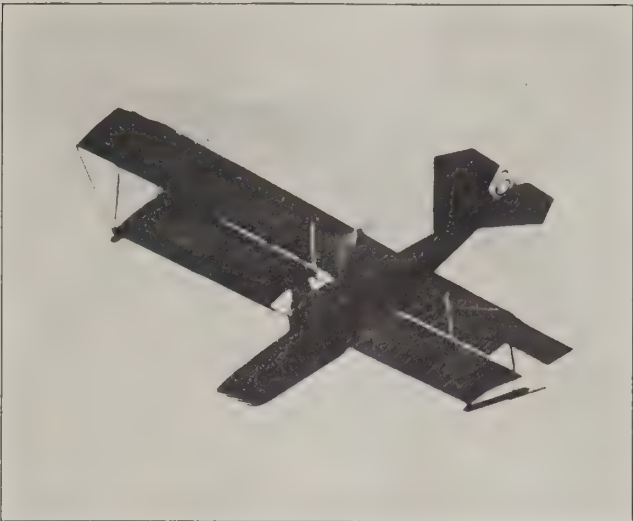
"You don't stop long after that, you know, for shrapnels and bullets seem to be whizzing all around you."

Well-Known Mercer Representative Decides to Enter the Flying Game

W. P. Pearson, representative for the Mercer automobile for the northern San Joaquin and Sacramento valley has been practicing aviating for the past several weeks. He endeavored to keep the matter quiet, but some one saw him at work and the matter got into the San Francisco papers.

"I discussed my plans with Beachey," said Pearson, "and he first advised me not to attempt flying. Later he learned that we had known one another some 15 years ago. He then told me to go ahead, but to be careful. 'Safety first,' is my motto, he said. He advised me to take it easy and offered any help he could give.

"I have signed up with Christoffersen Company. They will instruct me and will supply my machine. I find that flying makes a better automobile man of one as it acquaints you more with the engine. I do not intend to give up the auto game. I think one helps the other."



The interesting Shaw flying boat in flight. This machine, which has made many splendid flights, has the engine placed in front with the passengers' cockpit situated just in the rear. The motor is a 6-cylinder Johnson, 2-cycle, V-type

Cleveland Auto Makers to Back Plan of U. S. Flying Corps

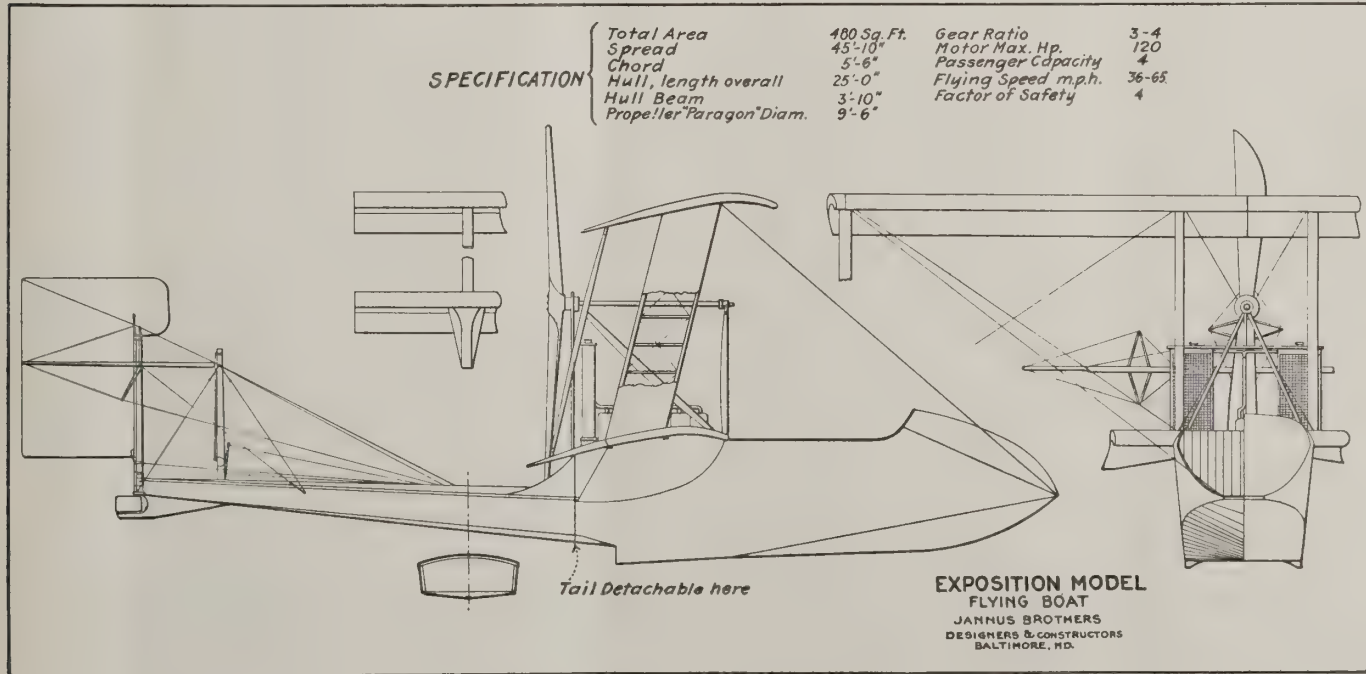
Cleveland may lead the United States to the mastery of the air. High officials of the companies making the Winton, Peerless, Stearns and White automobiles are in favor of the movement to develop the art of flying in Cleveland. With the great staffs of technical engineers, experimenters and mechanics possessed by the motor car companies it was prophesied that the pioneer aeronautical work in Cleveland will be built on the achievements of the automobile industry.

Edward J. Kelly, nautical expert, commander of the naval reserves who has been ordered to proceed with the establishment of a government aeronautical corps to have at least two aeroplanes is confident that with the backing representing capital, engineering skill and individual genius the Cleveland flying corps immediately will become the foremost in the country.

Formation of an aeronautical society probably will be the first step toward realization of the plans.

Mr. Harry B. Wise, formerly sales manager of the Twombly Car Corporation, of New York, is now general manager of the Aeromarine Plane and Motor Co., at Nutley, N. J.

One of the first of the new DG-6, 125 H.P. geared down motors of the Aeromarine Plane and Motor Co., has just been delivered to the Aircraft Co., at Boundbrook, N. J. A similar motor, but without the reduction gear is used by Art. Smith, in "looping the loop."



Sketch of the New Jannus 120 h.p. Maximotored Flying Boat



# Foreign News

Reported by L. d'Orcy and Robert Pluym

## Austria-Hungary.

Four balloons with ten men and four aeroplanes with eight men left the Przemyśl fortress during the last days of the siege. Only one aeroplane, carrying Captain Lehmann and Lieutenant Stanger has been heard from.

One of two aviators who left Przemyśl a few hours before its surrender gave the following details in an interview with a Hungarian journalist concerning the last hours of the garrison:

"Four of us left on two remaining aeroplanes at the time when the Russian shells began to fall on the aeroplane sheds. At this stage the garrison was engaged already in destroying guns and the interior fortifications.

"During the siege, we lost twelve aeroplanes and seven pilots; and seven officers who accompanied them as observers, were shot down. We do not know if they were killed or taken prisoners. In the last hours only two machines were available. In the fortress early in the morning shrapnel began to fall around, and we had to leave if we wanted to save the aeroplanes and ourselves from falling into the enemy's hands.

"The scene was indescribably terrible. When I encircled the fortress before leaving the smoke and flames of exploding ammunition stores shot up to the clouds. The military buildings and storehouses were in flames, and the incessant thundering shook the machine as the explosions took place below.

## Belgium.

A squadron of Belgium aeroplanes bombarded on March 28th the German aviation camp at Ghisteltes, seven miles southwest of Bruges, which had already been paid a visit by French airmen during a preceding British air raid upon the Belgian coast.

Percival Phillips, of the *Express*, telegraphs the following from the Belgian frontier:

"The Allies' aviators, in continuing their activity in the Zeebrugge area, which is directed primarily against the German submarine operations, are descending to a daringly low altitude. Faced by a bombardment of shrapnel and rifle fire an aviator on March 31st dropped five explosive bombs on the basin at Bruges and on adjacent workshops. The extent of the damage is not known.

"The same day four German aeroplanes made several flights from Rams-capelle and subsequently flew over the Allies' war ships. One, I hear was brought down, the aviator and observer both being killed."

## France.

Calais and Dunkirk were visited by German monoplanes on March 27th, but neither town was damaged. Six bombs were thrown on Dunkirk and one on Calais.

In the fighting that ended with the capture by French Arms of the Hartmans-Weilerkopf, the French used mostly captive balloons for locating the enemy guns, while aeroplanes were used for scouting. The extreme cold and heavy snowfall may account for these modified tactics.

Two more German air raids—one on Calais and the other on Hazebrouck—have taken place on March 29th. A Taube succeeded in dropping many bombs on Calais, but no one was injured, the only damage being done to roofs and windows. The machine was driven off by aeroplane guns from the forts. At Hazebrouck two children lost their lives by touching an unexploded bomb hurled into the place by an aviator.

French airmen, in the course of flights on the night of March 30th, dropped twenty-four bombs on stations and enemy bivouacs in the Woëvre, in Champagne, in the Soissons district and in Belgium. The following day the maritime station at Bruges and an aviation camp at Gits were bombarded.

The French official report of April 2nd says that a second attack has been made by the Belgian aviators upon the German aviation station at Hand-saeme, Flanders. French aviators dropped bombs on Mulheim, in Baden, and on Neuenburg, on the Rhine. To the south of Dixmude Aviation Lieutenant Garros brought down an aeroplane by machine gun fire. In the region of the Aisne another German aviator was brought to the ground by the French airman Navarre.

The *Hotel des Invalides* in Paris, which houses a captured Taube monoplane, also has on display a French military biplane, the MF 123, which was retired from active service after having been in service for five months, though it was still fit to perform its duties. The story of this machine gives a striking evidence of the extended role aeroplanes are playing in the great war.

Captain Moris, the pilot who flew the craft continuously during its five months of active service, made 132 flights over the German lines and spent a total of 252 hours and fifty minutes in the air. He was employed not only for scouting work for strategical and tactical purposes, but for directing the fire of artillery and bomb-dropping as well. Seventy-seven of his flights were made in reconnaissance, forty-eight in "spotting" for the French artillery, while seven were initiated for the purpose of attacking hostile airmen. One of his earliest victims was a captive balloon, in which two German officers were observing the work of the German artillery near Nancy.

Here is the official account of the aeroplane's activities:

July 31 to August 3—3 hours 40 minutes. Observation of patrols of the enemy from French territory.

August 4 to September 1—56 hours 5 minutes. Reconnaissance over Lorraine and along the Prussian Rhine. Observation for artillery.

September 1 to October 1—53 hours 35 minutes. Operations in the vicinity of Nancy. Destruction of German captive balloon.

October 1 to November 1—69 hours 10 minutes. Operations in Picardy. Destruction of a German monoplane.

November 1 to December 1—40 hours 15 minutes. Reconnaissance in Picardy. Bomb-dropping on German aviation centres.

December 1 to 24—30 hours 5 minutes. Operations in Picardy. Artillery observations and bomb-dropping.

Comparatively few repairs, considering the number of hits scored by the enemy, were necessary, as is shown by the large amount of time the aeroplane spent in the air.

## Germany.

Two more Zeppelins of the naval type, called L-9 and L-10 were completed respectively on March 12th and on April 3rd at Friedrichshafen and have joined their destination.

How a snowstorm prevented a Zeppelin invasion of England has just been learned. Two large dirigibles coming out of Schleswig were seen proceeding westward on March 29th. They passed over the island of Schiermonnikoog, bound evidently for the English coast.

Just after they had crossed the island a snowstorm of much severity arose which later became a blizzard. One of the aircraft immediately turned about and the other skirted along the Danish coast towards the German frontier. Both narrowly escaped destruction in the North Sea because the storm rendered them almost unmanageable.

When the second reached the German frontier it descended and was reported damaged. The crew was suffering from the cold. Some of the men intimated they were on their way to England.

According to the Berlin correspondent of the *V. Y. Sun* the Germans are building Zeppelins much faster than England is building ships. There is every reason to believe that en masse aerial attacks upon fortified cities of the enemy will be made before long.

Zeppelins and Taubes fly over Berlin at all hours of the day. They soar out of the capital on long trips. Their destination, of course, cannot be revealed. On April 1st Zeppelins and Taubes, in great air flotillas, manoeuvred over Berlin, while crowds thronged Friedrichstrasse gazing upward with admiration and shouting "Beautiful!"

The Hansa cruised back and forth with the greatest ease despite a heavy wind that amounted almost to a gale. Her crew could be seen plainly; her armament was hidden from sight. Across her nose was a great black cross; a German flag trailed from her stern. A Taube followed lazily in the rear. The Hansa is the last word in fighting monsters of the air. And she is the seventh completed and sent on her trial flight within a short space of time.

This report throws much light on Germany's airship activity. If the Hansa is actually "the last word in fighting monsters of the air" and "the seventh completed within short time" then it must be admitted that the old Hansa, launched in July, 1912, was destroyed during the war and replaced by the above mentioned ship. The expression "the seventh completed" may be understood as concerning the output of the Potsdam factory of the Zeppelin Company, whose working capacity is supposed to furnish one airship every four or five weeks. Considering that this factory was completed just before the outbreak of the war, since which eight months have elapsed, the supposition is mathematically substantiated.

A British B E seaplane  
—a machine constructed  
by different constructors  
on the designs of the  
British Navy.





The Friedrichshafen factory is supposed to complete one airship every three weeks; its greater efficiency in building airships is probably due to a better trained personnel having long years of experience, confirming the above supposition comes now the report that the tenth Zeppelin airship to be constructed at Friedrichshafen had a successful preliminary trial above Lake Constance on April 3rd. This latest type of dirigible balloon seemed to be longer and narrower than the previous models and possessed of greater speed. Apparently there is less space for the crew and for the carrying of bombs aboard the new craft.

Work has been started at Friedrichshafen on an eleventh dirigible. The officers and men at the Zeppelin works are said to still hold the belief that a concentrated Zeppelin attack will be made on London and ships in the Thames. This report proves beyond doubt that seventeen Zeppelins have been put in commission since the outbreak of the war.

An altogether different story is told by a neutral observer, writing at the date of April 2nd in *The Times* of his latest visit to Germany. He says:

"The Germans are utterly disappointed with their Zeppelins. London, they repeat, must be bombarded. Not all but a majority of the Germans are glad to hear of the killing of English citizens, no matter whether they are women or soldiers, but London is the place they aim at and want to destroy.

At the end of 1912 Germany possessed more than thirty airships of different models. What the exact number is at present nobody outside of the highest military circles knows for certain. I had the other day an interesting conversation with a business man who holds a patent for the manufacture of a special article necessary for Zeppelins. He said:

"Even I do not know the exact number and present strength of Germany's air fleet, but I cannot believe that it has increased since the beginning of the war. On the contrary I am of the opinion that we have just been able to replace our losses, which have been much greater than were expected. But the coming six months will enable us to build fifteen to eighteen new Zeppelins of a greatly improved model, better armed and able to carry more than two tons of explosives.

"This air fleet is most likely being built for the purpose of reaching London. That city will not be approached by one or two airships but by many and quite regardless of possible losses. If we have not yet made an attempt on London it is because our Zeppelins needed special improvements, as shown by experiments during the war."

Six German aeroplanes are reported to be concentrated in Zeebrugge, Belgium.

Thirty German soldiers were killed and sixty wounded near Thourout, Belgium, on March 27th by bombs dropped by five airmen of the Allies.

On March 29th, according to the skipper of the Dutch steam trawler *Hibernia* of Ymuiden, a German seaplane, carrying a crew of three and marked 79, flew over the ship and, without the slightest excuse or warning, threw a bomb at her. The bomb fell within twenty yards of the trawler and exploded without doing any damage.

This, the Captain added, was not the only evidence of German aerial activity in the North Sea, for, some time later, two Zeppelins were seen coming from an easterly direction, one being marked L-9.

#### Italy.

Italy now has twelve military dirigibles in commission and ten more are nearing completion.

Three of them are of the semi-rigid *Piccolo* type with 15,416 cubic feet of gas capacity, and a speed of thirty-five miles an hour.

Four are semi-rigid, of the *Medio* type, with 40,000 cubic feet of gas capacity, and a speed of forty-two miles an hour, with a range of 620 miles, to be covered in twenty-one hours. They carry two machine guns, one fore, one aft.

One is of the *Verduzio* type, semi-rigid, with 50,000 cubic feet of gas capacity, and a speed of fifty-five miles an hour. It can carry 8,000 pounds and range for fifteen hours.

One of the *Forlanini* type, semi-rigid, has 45,000 cubic feet capacity, sustains 8,000 pounds, flies forty-five miles an hour, ranges thirty hours.

One rigid, the *Grande*, has 152,000 cubic feet of gas space, with a speed of sixty miles an hour, carries 28,000 pounds, and has a compressed air gun as well as a torpedo tube, and several machine guns. Two riflemen are posted in lookouts on top of the balloon.

Two are of the *Parseval*, non-rigid type, with 30,000 cubic feet capacity and a speed of thirty-five miles an hour.

In addition there are building, to be ready in April, ten semi-rigid scout balloons.

The scouts, as well as all the other Italian army balloons, have a boat-shaped, hydroplane-nacelle, and can be used equally well under naval direction.

#### Mexico.

The Constitutionalist (Carranza) troops defending Matamoros and the Convention (Villa) troops which are besieging them are both provided with aeroplanes.

The former have four monoplanes, while the latter have two biplanes.

#### Montenegro.

Another attempt was made on April 1st by an Austrian aviator to destroy the entire royal family of Montenegro by an aerial attack. The aviator flew above the royal palace and dropped seven bombs. None of the royal family was hurt, but one of the bombs, falling in the palace courtyard, wounded four civilians and caused heavy damage. After his attack the aviator escaped, flying in the direction of Cattaro.

#### Russia.

During a bombardment by Russian warships on March 31st of Turkish Black Sea ports, Russian seaplanes threw bombs on Eregli and other places of military importance.

Fifteen German aeroplanes flew over Ostrolenka on March 29th, dropping a hundred bombs at an isolated house which they apparently mistook for Russian headquarters. None of the bombs hit the house and the occupants were not injured.

Near Jedwabno the Russians brought down a German aeroplane, capturing the officer and the mechanic.

#### Turkey.

The Russian Black Sea fleet having now joined the Allies' onrush upon Constantinople by bombarding the fortifications of the Bosphorus, the extremely valuable assistance given by seaplanes to a fleet attacking land defences is emphasized again.

The Russian General Staff state that on March 28th, Russian airmen flying above the Bosphorus batteries carried out reconnaissances and dropped bombs with success. According to their observations the Russian shells fell with great exactitude.

As has been said before in these columns, the naval air service of the Black Sea fleet consists of a large number of Curtiss hydroaeroplanes and flying boats.

## Books on Aeronautics

### THE FLYING BOOK, 1914 edition, 8vo., 183 pp.

This book should prove of great value to everyone who has even the least interest in aeronautics. It is a hand book, giving illustrations and specifications of foreign as well as American aeroplanes and motors. Ninety-six aeroplanes which are the products of forty-one manufacturers are described; also the motors of twenty-five manufacturers. Considering the enormous progress of aviation, it is remarkable to find a book with such "up to the minute" information.

The first few pages are given to: "A Hundred Years of Aeroplane Construction," "Military Aeronautics," and a list of the Aero Clubs of all countries. After the specifications of aeroplanes and engines, comes "Who's Who in Aviation"—concerned mainly with British aviators. There is also a directory of British, American, French and German manufacturers,—besides details of the aeronautical strength of European Governments.

Longmans, Green & Co. \$1.00 net. Postage, 12c.

### FLIGHT WITHOUT FORMULAE, by Commandant Duchene, translated by John Ledebor; 8vo., 211 pp., 1914 edition.

This is an ideal book for those who wish to make a study of the principles underlying the construction and stability of aeroplanes. The remarkable feature of this book is its simplicity: no theories nor formulae are used. It is simply an application of the facts which have been revealed by actual experiments such as those of Eiffel and others. No one who wishes to make a scientific study of aeronautics should fail to read this interesting book.

Longmans, Green & Co. \$2.25 net. Postage, 14c.

### THE RESISTANCE OF THE AIR AND AVIATION, by G. Eiffel, translated by Jerome C. Hunsaker. Royal 4to., 242 pp., 27 plates and numerous figures.

Nowhere is there to be found a more complete collection of the results of experiments with models than in this volume. Results are given of experiments with various aspect ratios, angles of incidence, wing curvatures, wing thicknesses, staggered biplanes, tandem surfaces, multiplanes, propellers, etc., etc. The actual wing sections of many famous machines are given as well as the results of their tests. "Eiffel's work makes it possible to calculate a full-sized aeroplane from the data obtained in experiments with a model. In nearly all cases the full-sized machines thus determined have given the results expected."

This is an excellent companion book to "Flight Without Formulae."

Houghton, Mifflin Co. \$10.00 net.

Any of these books may be secured through the office of *Aerial Age*.

#### CATALOGUE FILE

A catalogue file of all matter pertaining to aeroplanes, motors, accessories, etc., is being collected for the convenience of the readers of *Aerial Age*.

Every manufacturer is urged to make this file complete by sending bulletins and pamphlets of all goods handled.





Aeronitis is a pleasant, a decidedly infectious ailment, which makes its victims "flighty," mentally and physically. At times it has a pathologic, at times merely a psychologic foundation. It already has affected thousands; it will get the rest of the world in time. Its symptoms vary in each case and each victim has a different story to tell. When you finish this column *you* may be infected, and may have a story all of your own. If so, your contribution will be welcomed by your fellow *aeronuts*. Initials of contributor will be printed when requested.

One British aviator reconnoitering at 10,000 feet over the German lines, decided that if he descended to a lower level, where the German shells lost their upward motion, and were travelling horizontally at the top of their trajectory, he could fly alongside of them and reaching out his hands on either side (or both if the fishing were good) could catch them and extinguish the time fuses. So successfully did this idea work out that in a few minutes he had quite a cargo collected in his cockpit—some ten or fifteen large shells I believe—and congratulated himself on his good catch. He said that trout fishing and even sword fishing were not in it for excitement.—*H. H.*

And then, with no more danger of being struck by a shell, he was struck by an idea—another one. Not satisfied at catching the enemy's shells and keeping them from falling on his comrades below in the British trenches, he turned right around over the German lines again and, trusting to concussion to explode the shells (he had no matches with him with which to re-light the fuses), he dumped the shells overboard and destroyed the guns from which they were fired.—*A. H. S.*

Two dogs at Garden City Aerodrome are due for a hair cut and shave—and the cut may go a little deeper than the hair. A propeller revolving at 1,300 revolutions per minute with 100 horse power behind it is capable of giving a **very** clean cut. Little doggies should keep away from propellers.

To smooth out the rough spots of travel use an aeroplane.—*W. D. Y.*

The present day aeroplanes beat the ducks—they rise with the wind. No duck with normal senses would attempt that.

The Turkish daily paper *Sabah*, of December 3rd, published in Constantinople, gives us the following highly interesting news:

"Twenty-five German dirigible balloons have arrived at Adrianople, whence they transported the 1. Turkish Army Corps to its destination."

Must be *some* airship that can carry 2,000 Turks to their destination, wherever that may be.

If the newspaper correspondents in The Hague can be believed, the military aviator in the European war must prepare to battle the pelican in the air in the future. Herr Hoogstraen, a noted bird trainer of Delft, yesterday assembled the newspaper correspondents and with all seriousness assured them that he was training a flock of these birds to attack military aeroplanes.

Herr Hoogstraen said that he had been proceeding with the birds since the war started, and now had them trained so that they no more feared a German Taube than a fish. But the real secret for the success of the pelican in his battle against the

aeroplane, whether armored or not, must be told in his own words, relayed to the United States via the correspondents as follows:

"With their sharp pointed beaks, the pelican will be a real menace to air pilots, and can be trusted to bring down any aeroplane."

Herr Hoogstraen did not mention Zeppelins, but correspondents assert that it can be inferred from his remarks that the pelican can assault one of these German air machines of war equally as well as a Taube. Thus far Herr Hoogstraen has received no offers for his pelican fleet.—*N. Y. World.*



# MODEL NEWS

BY WALTER H. PHIPPS

## CLUBS

**THE AERO SCIENCE CLUB OF AMERICA**  
29 West 39th Street, New York City

**PHILADELPHIA MODEL AERO CLUB**  
2208 Brown Street, Philadelphia, Pa.

**PACIFIC NORTHWEST MODEL AERO CLUB**  
915 Ravenna Boulevard, Seattle, Wash.

**LONG ISLAND MODEL AERO CLUB**  
401 Grant Ave., Cypress Hills, L. I.

**BAY RIDGE MODEL CLUB**  
6730 Ridge Boulevard, Bay Ridge, Brooklyn

**CONCORD MODEL AERO CLUB**  
Concord, Mass.

**SUMMIT MODEL AERO CLUB**  
26 Shady Side Ave., Summit, N. J.

**THE ILLINOIS MODEL AERO CLUB**  
Room 130, Auditorium Hotel, Chicago, Ill.

**MILWAUKEE MODEL AERO CLUB**  
402 Bradford Ave., Milwaukee, Wisc.

**CONCORD MODEL CLUB**  
c/o Edward P. Warner, Concord, Mass.

**AERO CLUB OF ST. LOUIS**  
Columbia Bldg., 8th & Locust Sts., St. Louis, Mo.

**MODEL AERO CLUB OF OXFORD**  
Oxford, Pa.

### Aero Science Club Bulletin.

At the meeting of the Aero Science Club April 3rd, it was decided to postpone the annual election of officers, owing to severe weather conditions prevailing which prevented a majority of members from being present. The elections will be held April 10th, the following Saturday.

The prize for the Speed Contest to be held on April 18th, at the Van Cortlandt Park Flying Field will be a membership certificate to the Aeronautical Society, New York. The membership to the Aeronautical Society as first prize was gratuitously received by the members of the Club, and from reports all are working hard in anticipation of winning. The models will be flown over a course 528 feet in length or one-tenth of a mile; the model to cross the line in the least time will be declared the winner. Mr. Durant, director of the Club, will act as timer and Mr. McLoughlin will act as starter. Without doubt a successful meet will be held and the Club is working with that end in view. All model flyers, members and non-members, are requested to be present. As the contest will take place in the afternoon of April 18th, at Van Cortlandt Park and in anticipation of a large gathering, those who expect to participate in the contest are hereby requested to affix a bumper to the point of their machines in order to prevent injury to bystanders. This we are sure will meet with the approval of all.

At previous meetings, machines capable of rising from the water and landing on the ground were much discussed, and it is thought that a contest will be arranged in the near future for that class of machines.

### Illinois Model Aero Club Notes.

By A. E. Nealy.

The first of the series of distance meets was held Saturday, the 27th of March. The wind was very strong and only models of the finest caliber were able to get away. However, some very good flights were made by a few of the machines. The contest committee failed to provide a measuring machine and because of this no accurate measurements could be taken. The first, second and third prizes were easily taken by Emil Laird, Arthur Nealy and Ellis Cook. The "come-back" of Laird and Nealy was the surprise of the meet. These two members ceased constructing models two years ago. The move men were out again with their cameras and it is hoped that some good pictures were obtained. The meet registered numerous smash-ups.

The I. M. A. C. has started a series of readings and discussions on large machines at their semi-monthly meetings. A textbook by a known authority will be used.

### Conversation Between a Model Boy and a Passing Old Lady

By Arthur Elton Nealy.

Lady—Little boy, what is that which you have in your hand?

Boy —A model flying machine.

Lady—A wee, baby aeroplane; goodness me! It's something I never have seen.

How high

In the sky,

Little boy, will it fly?

Boy —O, way out of sight when the wind is just right  
And the rubbers are wound good and strong.

Lady—Well, who'd a thought such contraptions could be!

Now how do you push it along?

Boy —In the air.

Lady—But where?

Boy —Those propellers right there.

Lady—What? They make it go!

Then how do you know

That you won't fall down and be killed?

Boy —Well, Miss,

It's like this:

As it won't lift me up, you see I will never be spilled.

Lady—What! Won't lift you up! You said it would fly

O, ever so high.

Little boy, are you joking or telling a lie?

Boy —Well it can!

But a span

Of a foot and a half is not meant for a man.

Lady—Then who does the steering, and where does he sit?

My goodness! a flyer must have lots of grit.

Boy—But Miss!

Now this

Is a model. Gee Whiz!

Lady—O, I see, it's a toy

Made for some little boy.

Boy —No, no. Not a toy,

But a model! (Oh, Joy!)

Lady—My dear

You appear

Rather peevish, I fear.

But nowadays the urchins are all of 'em spoiled.

Ah, things were so different when I was a child!

Little brat!

What is that?

Boy —A winder. (Old cat!)

Lady—Well, now will you wind it and fly it for me?

Boy —Yes, yes, if you'll hold it a minute, I'll see.

(Hands propellers to lady and starts winding)

These bands are the motors; you see how they wrap

Around tighter and tighter—and sometimes go SNAP!

Lady—Oh! Ow!

Boy —That's how

The motor back-fires. Here, take it again.

Lady—My goodness, no, sonny—'twas bad enough then.

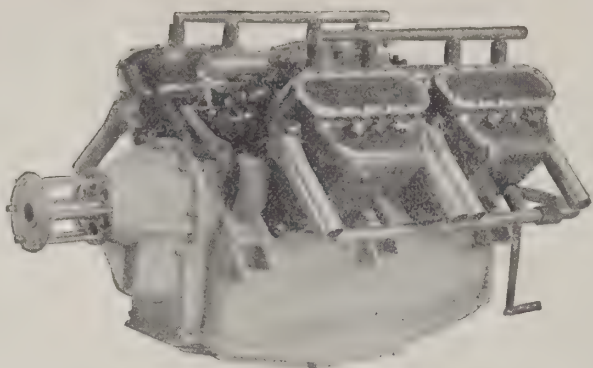
### The Milwaukee Model Aero Club.

By Lynn E. Davis.

Up till now the Milwaukee Club has had no regular meet this year, but nevertheless the members have been very active and a great deal of flying has been indulged in, tests being made with distance, duration, tractor and hydro models. The club's best official duration record to date is held by Mr. Lynn E. Davis with a flight of 103 seconds, made on February 29th. The club counts as official any flight which has been witnessed and judged by the official judge elected by the club and which the flyer specifies before the attempt is to be a trial for a record. The club's distance record is still 1,400 feet, made last fall by Mr. Gilbert Counsel.

(Continued on page 92)





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## Aeronautical Motor

is the most powerful motor in the country that is thoroughly perfected and tried out. Sturtevant motors are used by the U. S. Army and Navy and all the leading aeroplane builders.

Other sizes } 4 cylinder—50 H. P.  
                  } 6 cylinder—80 H. P.

Specifications upon request.

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Boston, Mass.  
and all principal cities of the world



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**N**OW testing their new 120 h.p. Flying Boat. Announcement will be made shortly. A full working force of competent aviators for *instruction, exhibition and passenger carrying.* **Learn to fly at a Jannus School.** Tony Jannus and Fritz Ericson in the East; Roger Jannus and J. D. Smith at San Diego.

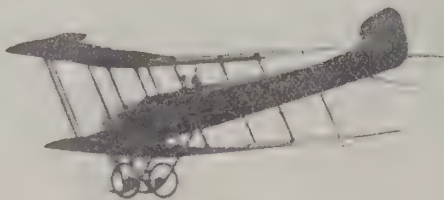
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Plan and instructions with full-sized hull lay-out, 50c. post paid. Plan and instructions alone, 35c.

**Other Model Plans.**—Phipps' "Avis" Tractor hydro-aeroplane, 25c., with pontoon blue prints, 35c.; "Long Island Racer," 25c.; Excelsior Tractor, 35c.; Bleriot Racer, 25c. *Write now for complete 1915-1916 Instruction Book and Catalogue, 7c. post paid.*

**THE MODEL SUPPLY HOUSE, Walter H. Phipps, Dept. G. 503 5th Ave., New York**

(Continued from page 91)

The Milwaukee Model Aero Club plans to hold its first regular meet on April 11th. This contest will be for duration, but exhibition flights will be made with all types. During the month of July the club members are going to Chicago to compete against the Illinois Model Aero Club.

\* \* \*

K. M. Turner's Aviaphones, manufactured by the General Acoustic Company, of 220 West 42nd Street, New York, are used in number by the aviators of the Black Sea fleet; and orders for the military aviators of different countries are being filled as fast as the factory can turn them out.

**STATEMENT OF THE OWNERSHIP, MANAGEMENT, etc., of AERIAL AGE WEEKLY, published weekly at New York, N. Y., required by the Act of August 24, 1912.**

Editor, William Menkel, 116 West 32nd St., New York; Managing Editor, William Menkel, 116 West 32nd St., New York; Business Manager, George B. Wagner, 116 West 32nd St., New York; Publisher, The Aerial Age Company, Inc., 116 West 32nd St., New York, N. Y.

Owners, The Aerial Age Company, Inc., Henry Woodhouse, Proprietor, 297 Madison Ave., New York, N. Y.

Known bondholders, mortgagees, and other security holders, holding 1 per cent. or more of total amount of bonds, mortgages, or other securities: None.

GEORGE B. WAGNER, Business Manager.

Sworn to and subscribed before me this twenty-ninth day of March, 1915.

James L. Crawford,  
Notary Public D. C. My commission expires January 2, 1918.

Advertising  
in this department  
10c. a word  
\$2.50 minimum

## Classified Advertising

Forms close for this department on Monday preceding date of issue

**Wanted**—Draftsmen with ten years' experience and skilled in the design and layout of aeroplanes.

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for aviator planning long distance flight. Must be experienced in securing exhibition dates.

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Woodworkers, sheet-metal workers and assemblers with aeroplane experience.

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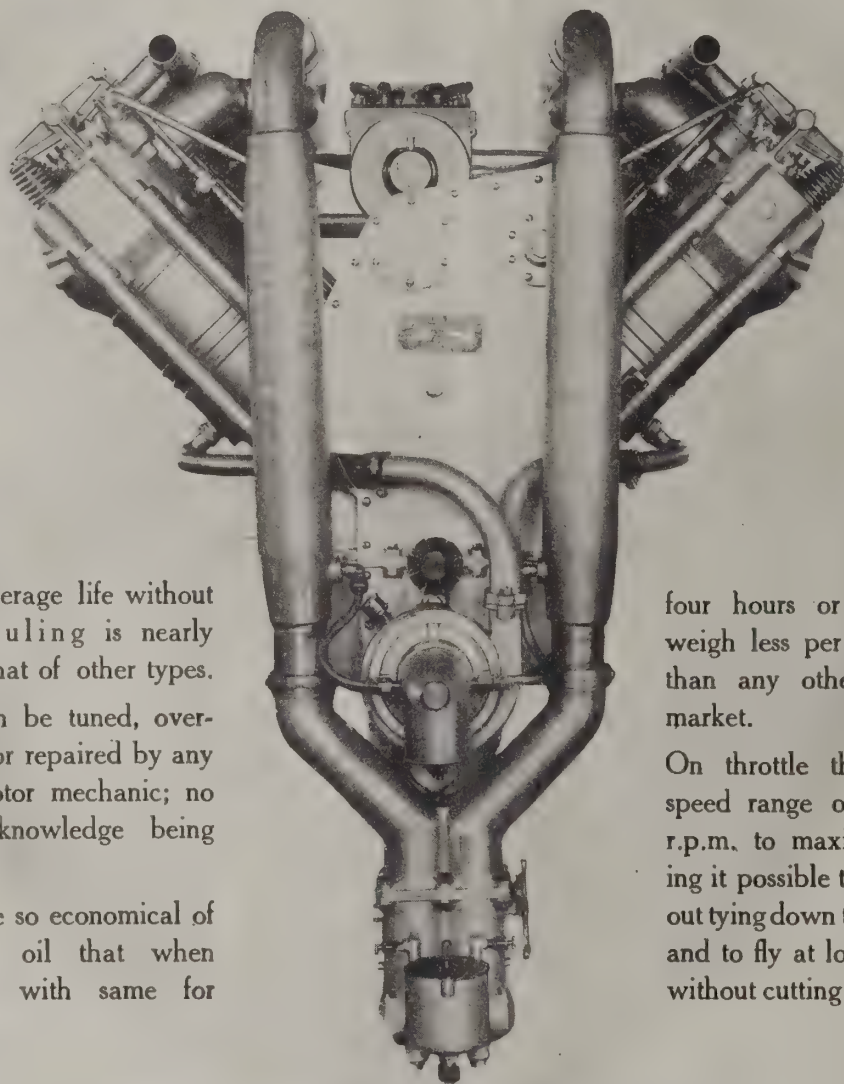
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1915 APR 19 1915

# AERIAL AGE

## WEEKLY

Vol. I. No. 5.

APRIL 19, 1915

10 CENTS A COPY



*Earl Daugherty at Long Beach*



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**T**HE Flying Boat in this picture has been in the air 500 hours, traveling 30,000 miles. In this boat hundreds of passengers have been carried and dozens of persons have learned to fly. There have been no accidents nor repairs. This machine is equipped with the newly developed and very efficient single-acting aileron system for lateral balance.

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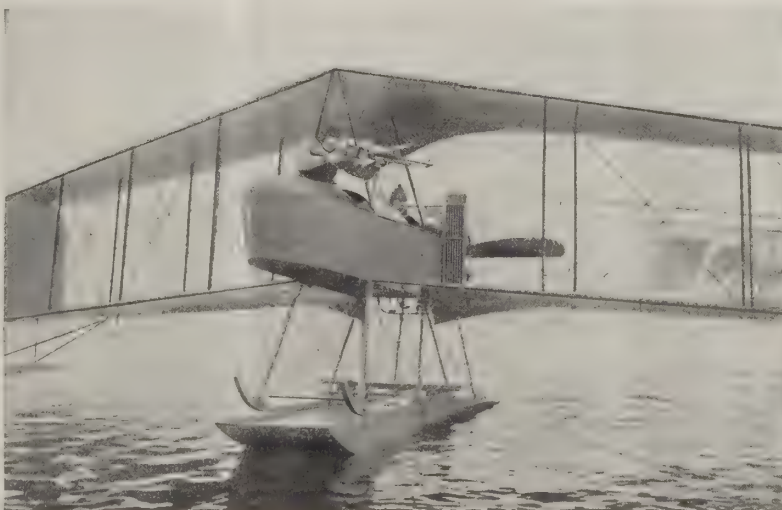
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Aeroplane of  
the world.

Tail-less and  
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SPEED RANGE,  
40-80 miles per hour.  
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*Burgess-Dunne convertible land and marine type as furnished the U. S. Army*

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*Sole American Licensees under the Dunne Patents.*

MARBLEHEAD, MASS.



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FOR SPORT, EXHIBITION OR MILITARY USE,  
OVER LAND OR WATER now embody the improve-  
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conducted during the past ten years



*The New Wright Model "HS"*  
*MILITARY FLYER*

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## THE WRIGHT COMPANY

(The Wright Patents)

Dayton, Ohio

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# The National Aeroplane Competition

## Further Details Regarding the Plans of the Stupendous National Aeroplane Competition

THE National Aeroplane Competition is to start on Independence Day, July 4th, and end on Columbus Day, October 12th, 1915. It is to be held throughout the country under the auspices of the Aero Clubs of the United States, with the co-operation of the states, cities, military and educational institutions, and sporting, scientific and business organizations of the United States, to assist the War and Navy Departments in developing aviation corps for the National Guard and Naval Militia, to demonstrate for the Post Office Department the practicability of carrying mail by aeroplanes to hundreds of places so isolated that it now takes days to deliver mail that could be delivered by aeroplane in a few hours, to develop the sport and to demonstrate the practicability of the aeroplane for general use.

### Tentative Schedule of Prizes to Be Offered

1. A "best record" prize of \$10,100 to be awarded in daily prizes of \$100 each to the aviator who holds the best cross-country flying record at the end of each day, the record to have been made in a flight of not longer than ten hours' duration and the distance to be measured in a straight line. This prize has the special value of inducing aviators to fly daily in order to beat the standing record. It will undoubtedly result in aviators making flights between representative cities each day during the Competition. Ten hours is adjudged to be a normal flying day, and that limit has been imposed to prevent excess.
2. Eight "best record" prizes aggregating \$10,100, to be awarded to the eight aviators who make the best records in the Daily Distance Competition, the prizes to be \$3,500, \$2,500, \$1,500, \$1,000, \$750, \$500, \$250 and \$100.
3. A \$25,000 prize to be divided between the three aviators who make the best time in flights across the continent, starting from or ending at New York. This would induce the eastern aviators to continue their flights to the Pacific coast and the western aviators to the Atlantic, and may result in a number of trans-continental flights during the Competition.
4. A prize of \$5,000 or \$10,000 for the best demonstration of the practicability of mail carrying, to be judged from the standpoint of regularity of service, protection afforded to mail matter from the elements and the advantage of time saved over other methods of mail distribution. The Post Office Department has prepared a schedule of isolated places in certain states where the delivery of mail between points twenty and ninety miles apart now require days, but which would require only an hour or two by aeroplane. The principal value of this prize is that it will afford to the Post Office Department the opportunity of determining if the people who want their mail delivered promptly will pay between 25 and 50 cents to have it delivered by aeroplane. If so, aero mail-carrying will be self-supporting and the Post Office Department can establish a number of lines immediately and thereby solve some difficult problems of mail distribution, as well as to begin the creation of an aviation reserve which will have the advantage of being used daily in peace, while being ever ready for service.
5. Prizes amounting to between \$5,000 and \$10,000 to be divided among the aviators who cover the greatest number of miles during the Competition, flying entirely by chart and compass.
- Prizes of between \$1,000 and \$5,000 for
6. The best land and water aeroplanes participating in the Competition, con-

- sidered from the standpoint of engineering and general finish in construction of the machine and comfort afforded to the pilot and passenger.
7. The best "schedule record" made, judged by the number of times an aviator reaches previously designated places on time.
  8. The best demonstration given by both land and water aeroplanes equipped with automatic stabilizers.
  9. The lowest consumption of fuel and oil for miles covered.
  10. The largest number of passengers carried a given distance in land or water aeroplanes, the construction of the machines to afford the pilot and passengers the greatest possible amount of convenience and having proper seating capacity for each passenger.
  11. The best demonstration given by either a land or water aeroplane equipped with two motors, which can be run independently of each other.
- All conditions are made principally with the intention of fostering normal flying by normal aviators. Therefore, while the world's record for continuous flying is of 24 hours and 12 minutes, and for distance covered in one day is of 1,300 miles, the Contest Committee of the National Aeroplane Competition has limited the "flying day" to ten hours.
- Prizes to encourage greater achievements that are easily within the possibilities of the present day aeroplanes and aviators are, however, to be offered—principally to induce the development of special aeroplanes for long-distance aerial touring, and to train aviators for long-distance cross-country flying.
- It is planned to raise the money for these prizes among the members of the Aero Clubs of the United States, and special prizes for special events are being solicited from cities, states and private organizations.
- Every effort is being made to secure the necessary funds for the above-mentioned prizes through the Aero Clubs of the United States. The Aero Club of America tried the possibility of raising a substantial sum in contributions from its members, and a week after mailing the letters it had received contributions to the amount of \$2,000. A number of wealthy members had also written for fuller details, no doubt with the intention of making substantial contributions or of offering individual prizes.
- The Aero Club of America expects to raise between \$10,000 and \$25,000. If each of the Affiliated Aero Clubs raise between \$5,000 and \$15,000, the total amount will be more than sufficient to carry on the present plans.
- Twelve Hundred Cities Asked to Offer Special Prizes
- In connection with this nation-wide Competition, believing that the cities would prefer a highly constructive type of entertainment to the dangerous fireworks of the Fourth of July, the Contest Committee has suggested that a day or season of flying such as never before been witnessed in this country, can be provided for cities that offer prizes to the amount of from \$2,500 to \$7,500.
- A letter to this effect has been sent to the Mayors and Chambers of Commerce of twelve hundred cities of the United States. As these letters have just been mailed, the possible returns are not yet available, but the mere announcement of this unprecedented Aeroplane Competition has created such tremendous interest all over the United States and many municipalities and organizations have signified their desire to co-operate before receiving the contest committee's letter.

(Continued on page 107)

FIRST WEEK CONTRIBUTIONS FROM MEMBERS OF AERO CLUB OF AMERICA TO NATIONAL AEROPLANE COMPETITION			
Alan R. Hawley	-	-	\$250.00
Mortimer L. Schiff	-	-	250.00
Editors and Publishers of <i>FLYING</i>	-	-	250.00
Editors and Publishers of <i>AERIAL AGE</i>	-	-	250.00
Samuel H. Valentine	-	-	100.00
S. R. Guggenheim	-	-	100.00
Robert Glendinning	-	-	100.00
Frank A. Seiberling, President, Goodyear Tire & Rubber Co.	-	-	100.00
George W. Turney	-	-	100.00
Howard Huntington	-	-	25.00
Walter H. Phipps	-	-	25.00
F. A. R.	-	-	25.00
Isaac M. Ulman	-	-	25.00
James Byrne	-	-	25.00
John Dale Cooper	-	-	25.00
Edgar M. Berliner	-	-	25.00
Thomas S. Baldwin	-	-	25.00
F. H. Russell	-	-	25.00
Albert S. Heinrich	-	-	25.00
K. M. Turner	-	-	25.00
Bernard A. Law	-	-	25.00
Charles F. Niles	-	-	25.00
William H. Bliss	-	-	15.00
Harold H. Brown	-	-	10.00
Lieut. J. E. Carberry, U. S. A.	-	-	10.00
A. Leo Stevens	-	-	10.00
Lieut. F. Dortch, U. S. N.	-	-	10.00



## The Burgess-Dunne Military Convertible Land and Water Plane

By Walter H. Phipps

**D**URING the fall of 1913 Mr. Starling Burgess, of the Burgess Aeroplane Company of Marblehead, Mass., obtained the sole license for the manufacture of aeroplanes using the Dunne system of inherent stability in the U. S. During the year following, the Burgess-Dunne machine was produced and successfully demonstrated before representatives of the United States Army and Navy, who were quick to recommend its adoption for military and naval purposes. Since then many new types have been brought out and delivered to various foreign governments as well as to the United States.

However, the standard type, which is the subject of this description, is the Convertible Military Land and Water-Plane illustrated in the accompanying photograph and drawings.

As may be seen, the wings are the usual swept-back type of regular Dunne formation with the leading edge set at an inverted dihedral angle, producing a negative angle at the tips. They are built up in the usual manner on two main-spars of spruce, the front one forming the leading edge. The camber increases from practically nil at the centre to a maximum at the tips, which are decidedly pointed down. It is due to this peculiar formation of back-sweeping wings with decreasing angle of incidence towards the tips that the machine owes its natural inherent stability, owing to the righting couples produced, as described at length in recent articles appearing in our excellent contemporary *Flying*.

At the centre of the lower plane is the two-seated nacelle, which accommodates the pilot and passenger situated tandem and also carries the gasoline tanks and motor at the rear. This nacelle, which is furnished covered with armor plate when desired, is given a very pleasing streamline form and is arranged to carry a gun mounted at the nose. This machine gun, it will be noted, is mounted by a special attachment devised by Mr. Burgess, which permits the gunner to take advantage of the excessive range offered by the backward sweep of the wings.

The machine is designed to be operated either as a land or water plane, provision being made for rapidly attaching and detaching a central hydroplane float. On the land it is sup-

ported by two central wheels mounted on a single axle and sprung on to the two skids by rubber shock absorbers. On the water it is supported by a single central float measuring 18 feet 2 inches long by 3 feet 2 inches wide, with a maximum depth of 17 inches. The float, which is of the usual fine Burgess design and construction, tapers to a knife-edge forward, and has a single hydroplane step at a point about one-third the length from the stern. Auxiliary floats, in place of the regular skids used when the machine is operated on land, are fitted at each extremity of the wing in their place. These auxiliary floats are similar in shape to the main float, but have no step.

Since there is no rudder used, the control is operated simply by two movements. This control consists of two flaps only, operated by two separate levers, the right hand lever operating the right flap, the left one the left flap.

To ascend, both levers are pulled back together, causing the flaps on each side to move up and thus force the wing tips—which by reason of their position act virtually in the form of a tail—down, after the fashion of a tail elevator. To descend, the levers are pushed forward, with the reverse effect.

When it is desired to turn to starboard, the left-hand lever is pushed forward and the right-hand one pulled back, and the reverse for steering to port.

The general specifications are as follows:

Total weight, 1760 lbs. net.	Hydroplane, beam, 3 ft. 2 ins.
Length, 20 feet, 4½ inches.	Hydroplane, draft, 1 ft. 5 ins.
Span, 46 feet, 2 inches.	Hydroplane, weight, 267 lbs.
Chord, 6 feet.	Land equipment, 2 skids, 14 ft. x 2 inches x 2¼ inches.
Area, 484 sq. feet.	Wheels (2), 26 ins. x 5 ins.
Mean Camber, top, 1-16.5—	Wing skids (2) elastic.
Upper, 1-30 lower.	Motor, 130 h.p. Salmson.
Bottom, 1-22—Upper, 1-48	Weight of motor, 480 lbs.
lower.	Weight of Radiator (Burgess), 95 lbs.
Aileron area, (four) 56 sq. ft.	Propeller (Burgess), 9 ft. dia., by 5 ft. 3 ins.
Panel area, (two) 76 sq. ft.	
Control (duplicate) 2 levers.	
Hydroplane (length) 18 ft. 2 in.	



The illustration shows the body, seating arrangement of pilot and passenger, and swinging arm for the gun of the military Burgess-Dunne. The passenger is using the Turner Aviaphone.





## The Gyro-"Duplex" Motor

By Neil MacCoull

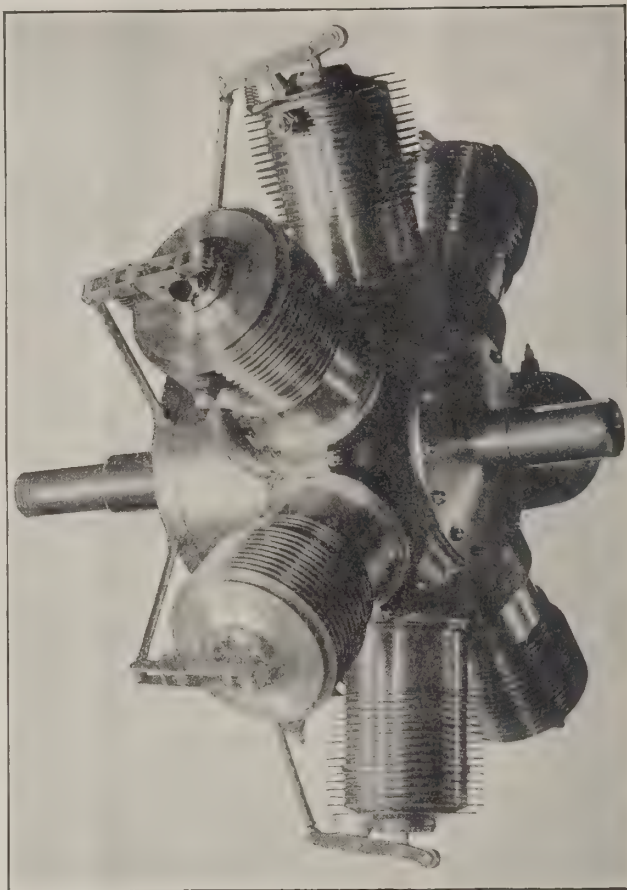
**M**OST of the knowledge of aeroplane motors possessed by the average enthusiast is the result of his familiarity with the automobile motor. With nearly 1,800,000 automobiles in the United States, a man can hardly be considered well informed, to say the least, who does not understand the fundamentals of the gasoline engine.

Since the revolving cylinder motor is practically unknown in the automobile field, it is hardly surprising that most people look with more than usual interest on an engine in which the moving parts with which they are familiar are stationary, and the cylinders which they have thought must always be stationary, are revolving. This peculiar reversal of the usual arrangement was successfully tried out in America about seven years ago. Later a similar engine was built in France. The enormous success of the French motor, proves conclusively that this radical type of construction has its advantages over the conventional types, particularly where weight is concerned.

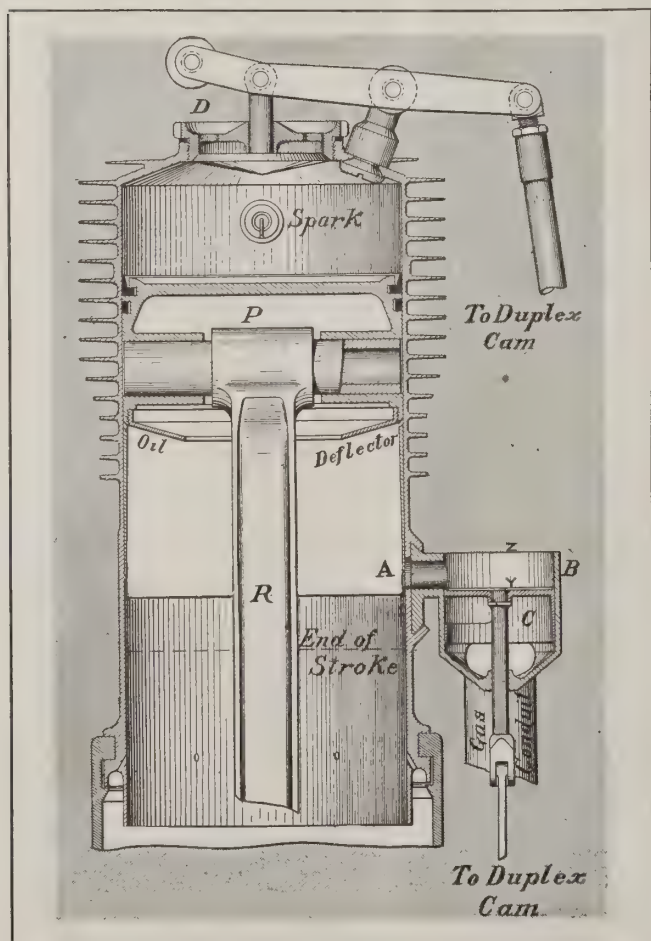
For a number of years, the Gyro Motor Company of Washington, D. C., has been working on a motor of this type, which has recently gained much favor because of certain exclusive features. During the last year they have added to their product, and now offer two types of air cooled, four-cycle motor to the aeroplane industry: type "K" rated at 90 H.P., and type "L" rated at 110 H.P. The construction of both is similar, the primary difference being the number of cylinders, the former having seven, and the latter, nine.

The main feature of these motors which distinguishes them from all others, is a unique combination of poppet exhaust valve with a piston valve which controls the intake and an auxiliary exhaust. Aside from simplicity when compared with the intake valve in the piston, as has been customary in the past, the greatest advantage lies in the saving of lubricating oil. The great quantity of oil consumed has been one of the chief drawbacks to the revolving motors up to the present.

Another advantage in the use of the auxiliary exhaust is that the main exhaust is not subjected to such great heat from the exhaust gases as it would be otherwise.



Seven cylinder Gyro "Duplex" Motor



The action of this valve mechanism may be understood from the accompanying line cut.

Starting with the explosion stroke, the main piston "P" moves down until it uncovers the exhaust ports "A." At this moment the intake piston valve "C" is in the position shown in the diagram, and consequently the exhaust gases are free to escape. The pressure in the cylinder having been relieved, the main exhaust valve "D" now opens. The upward travel of the piston forces all of the remaining burned gases out of the main exhaust valve, which remains open, allowing fresh air to be drawn in as the piston starts down on the intake stroke. Just before the main piston again reaches the auxiliary exhaust port, the main exhaust valve closes. The intake piston valve has now reached its top position, so that when the main piston uncovers the port, there is a free passage for gas from the crank case to the cylinder. The gas which enters combines with the air already in the cylinder to form the proper explosive mixture. On the return stroke this mixture is compressed, thus completing the cycle.

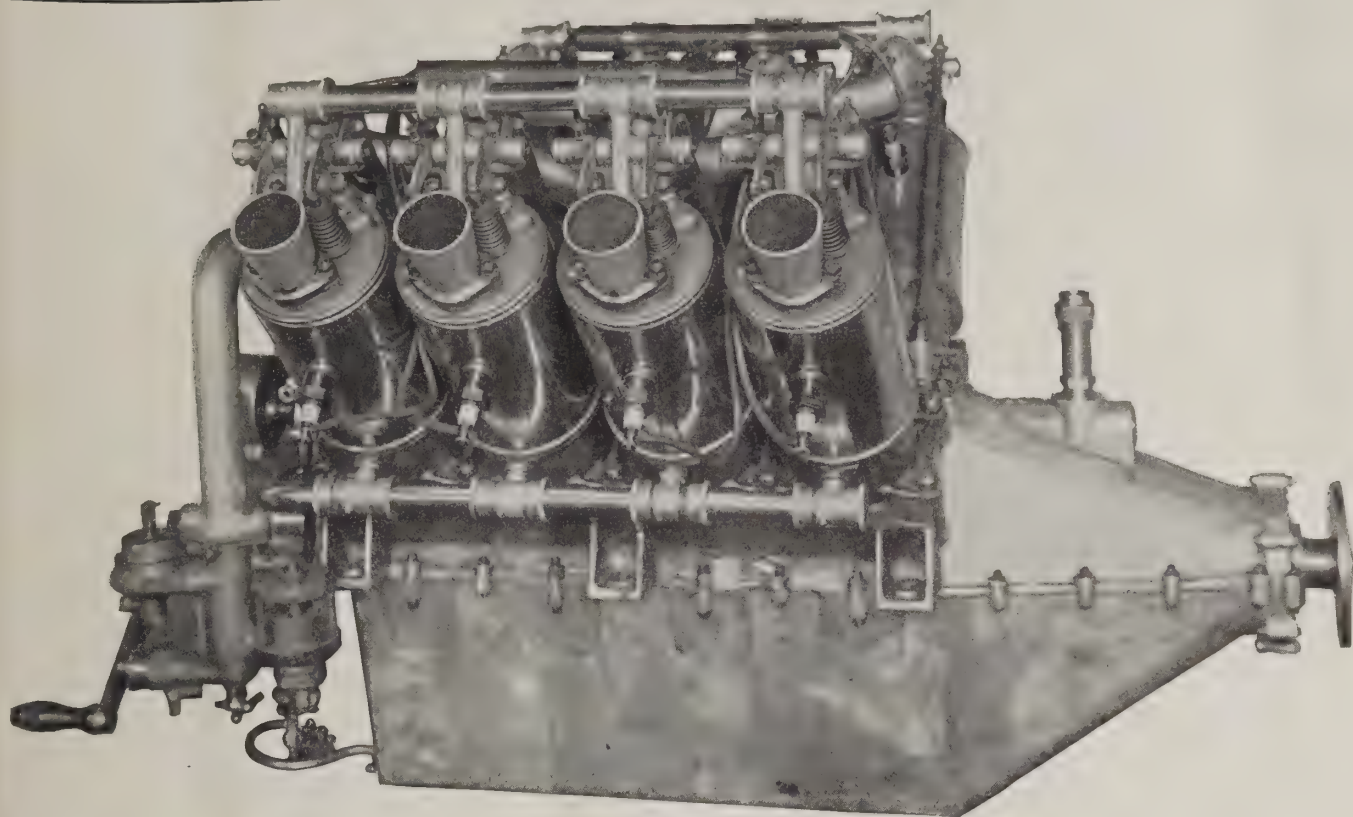
A "Duplex" cam, peculiar to the motor, operates all of the valves, and it is from this feature that the motor derives its name. Castor oil is the lubricant used, it being fed to the motor by a positive displacement pump. The gasoline is pumped by a gear pump to the mixing valve, which is fixed on the end of a hollow crank shaft. The ignition is effected by a high tension Bosch magneto, and distributing ring fixed to the motor.

The motor swings on two annular ball bearings set into special mounting frames supplied with the motor. A compression release facilitates starting, which is effected by means of ratchet and pawl.

Cylinders are machined from solid billets of Vanadium steel, and weigh less than eight pounds when finished. Special alloy steels are used throughout the motor, making possible the light weight for which the motors are noted. Since the cylinders revolve, no fly-wheel is required.

(To be continued)





*The 135 Horsepower Wells-Adams Aero Motor*

#### **Builds Large Air-Cooled Motor for Aeroplane Use**

Another large aeroplane motor designed to meet military requirements has been completed on contract by the Taft-Peirce manufacturing Company, of Woonsocket, R. I. It is the Ashmusen motor, rated at 105 horsepower.

The new motor has twelve stationary cylinders opposed horizontally, six on each side, and is air cooled. It is said to have delivered more than the rated power in bench tests. It has been installed in a flying boat built by the B. F. Stephens Company, of Providence, R. I., for naval use. The Stephens Company was among the bidders for the United States navy's squadron of six hydroaeroplanes, proposals for which were opened last month.

#### **The Wells-Adams Motor**

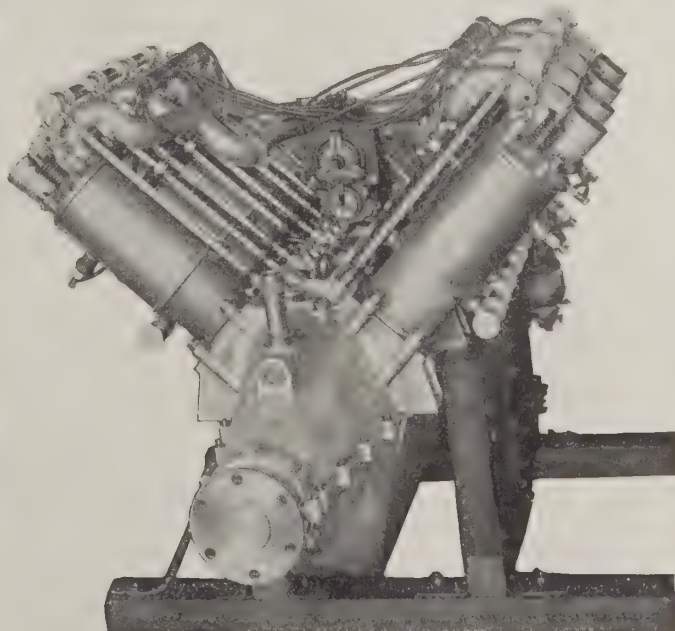
The Wells Adams aeroplane motor has eight cylinders,  $4\frac{1}{2}$  inches in diameter, with a stroke of 6 inches. At 1,350 r. p. m. it is rated at 135 horsepower.

The cylinders are individual, with nickel-plated spun brass water jackets. The water outlets, valve rockers, and connections to the inlet manifold for each cylinder are cast integral, of aluminum. Water connections between the cylinders are made by short tubes held by glands which make them water tight.

Connecting rods are tubular, of chrome nickel steel. The hollow crankshaft is made from this material also. Ignition is by a Bosch Dual magneto. Lubrication throughout is by pressure feed. The weight of the motor complete is about 400 pounds



*The Heinrich Tractor, showing the Mounting of the 110 h. p. Gyro Motor*



*End View of the Wells Adams Motor*



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SUBSCRIPTION RATES:  
Domestic, \$4.00 per year  
Foreign, \$5.00

ADVERTISING RATES:  
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Quarter \$25.00, Eighth \$14.00,  
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sertions, 15%; for 52 consecutive inser-  
tions, 17%.  
Cash discount, 3%, 10 days.  
For other rates see Classified  
Department.

PUBLISHED WEEKLY BY THE AERIAL AGE COMPANY, Inc., 116 West 32nd Street, New York City  
Entered as Second-Class Matter March 25, 1915, at the Post Office at New York, N. Y., under the Act of March 3, 1879

VOL. I.

NEW YORK, APRIL 19, 1915

No. 5

## The National Aeroplane Competition

THE tentative plan of the National Aeroplane Competition printed elsewhere in this number, which has been received as *Aerial Age* was going to press, calls for lengthy consideration which cannot be given in this number. But even a casual perusal will reveal its wholesomeness and fundamental value.

The general purpose is remarkable: "To be held throughout the country under the auspices of the Aero Clubs of America, with the co-operation of the states and cities, military and educational institutions, and sporting, scientific and business organizations of the United States to assist the War and Navy Departments in developing Aviation Corps for the National Guard and Naval Militia, to demonstrate for the Post Office Department the practicability of carrying mail by aeroplane to hundreds of places so isolated that it now takes days to deliver mail that could be delivered by aeroplane in a few hours, to develop the sport and to demonstrate the practicability of the aeroplane for general use."

The time selected, from Independence Day, July 4th, to Columbus Day, October 12th, is the very best.

The commendable intention is expressed to make "all conditions are made principally with the intention of fostering normal flying by normal aviators. Therefore, while the world's record for continuous flying is of 24 hours and 12 minutes, and for distance covered in one day is of 1,300 miles, the Contest Committee of the National Aeroplane Competition has limited the 'flying day' to ten hours." But "prizes to encourage greater achievements that are easily within the possibilities of the present day aeroplanes and aviators are, however, to be offered—principally to induce the development of special aeroplanes for long-distance touring, and to train aviators."

The provision that: "aviators participating and winning prizes to the amount of \$7,500 and upward will agree to put themselves and their machines at the disposal of the National Guard and Naval Militia, free of compensation, for 15 days during the ensuing year, their expenses and costs to be paid, of course, by the organizations availing themselves of their services" is praiseworthy.

The entire plan is highly public-spirited and deserves hearty support.

## When Aircraft Turn Hawaii Into an Aerodrome

AIR navigating in Hawaii has been placed under restriction similar to that enacted to control aircraft at the Isthmus three years ago. The enactment reads:

Act 14.—An Act to prohibit the operation of aeroplane, balloon and other aircraft in the Territory of Hawaii, with certain restrictions. Be it enacted by the Legislature of the Territory of Hawaii:

Sec. 1. No person shall, without a license from the Governor, operate an aeroplane, balloon, or other aircraft in or across the Territory of Hawaii, except a member of the Aviation Corps of the United States Army, United States Navy, or National Guard of Hawaii, or a person employed in the United States Military or Naval Service as a pilot.

Sec. 2. Any person who shall violate any of the provisions of this act shall, upon conviction, be punished by a fine not exceeding \$1,000, or by imprisonment not exceeding one year, or by both such fine and imprisonment in the discretion of the court.

Sec. 3. This act shall take effect from and after the date of its approval.

Approved this 22d day of March, A. D. 1915.

LUCIUS E. PINKHAM,

Governor of the Territory of Hawaii.

Governor Pinkham has the power to exclude—but it requires an Act of Congress and a petty, wearisome campaign to get the men and funds necessary to form the smallest tactical unit—two aeroplanes, four officers, and a dozen mechanics. When aircraft turns Hawaii into an aerodrome and its forts into landmarks, then maybe it will be realized that they can be employed to great advantage for administrative purposes.

## Isthmus Needs Aerial Police

IN the last number of *Aerial Age* we printed the following despatch:

Military and canal authorities are investigating a report reaching headquarters from officers of the lock guard that an aeroplane has been seen flying over the Pedro Miguel and the Miraflores locks.

Major General George W. Goethals, Governor of the Canal Zone, and Brigadier General Clarence R. Edwards, Commander of the United States forces of the isthmus, both detailed men to make an exhaustive search for the machine, which is said to have been seen and heard over the locks last night. The aircraft is also reported to have flown over Hill 15, which is heavily intrenched and located east of the Pedro Miguel locks, of whose defences it forms a part.

It is known that a Bleriot machine is owned on the isthmus, but its whereabouts has not been ascertained.

We have been unable to learn whether the search was conducted for the purpose of finding the craft and showing it as a rarity or whether the treat was inappreciated. But can the Canal be considered complete and equipped for the purpose for which it was built without an aviation corps?

## Who Will Do This?

OUR excellent monthly contemporary *Flying* publishes the following appeal from Mr. Burt M. McConnell, formerly Secretary to Vilhjalmur Stefansson:

Editor of *Flying*:

Dear Sir—In your wide circle of friends and acquaintances who are interested in aeronautics, do you not know of some sportsman who owns his machine and who would be delighted at the opportunity of demonstrating the possibilities of long and extended flights in the Arctic region? At the same time this hypothetical sportsman could distinguish himself in a most important and humane work—the search for Vilhjalmur Stefansson, commander of the Canadian Arctic Expedition, and ten of his missing men, who have not been heard from since March, 1914.

Opportunities for thrills would be numerous, for at no time in the Arctic can one foretell what will happen within the next few hours. Hunting and photographing polar bears, walrus and other big game from the hydroaeroplane would be one of the attractions of the cruise, which might last until October, 1915, or 1916, as results might warrant. Then it is possible that we might discover the only remaining land mass of any considerable extent left in the world—the land which Stefansson and his men sought—but the humane aspect of the search is the major one; in my opinion the world can ill afford to lose those men.

The possibilities of the hydroaeroplane for achievement in



this field are almost unbounded. The venturesome aviator and explorer, aside from the duty to humanity they will be performing in making the search for the missing men, will be amply repaid by some of the things they are sure to find. For instance, it is a matter of Arctic history that more than a hundred ships (and no one knows how many men) have been lost in the ice. Some ships, however, have simply been frozen in and carried away as the *Karluk*, Stefansson's ship was, and it is reasonable to suppose that some of those vessels are still held in their icy berth. Last year one came to light after having been lost in the ice for eight years, and she was perfectly sound when discovered.

We should undoubtedly find some of these derelicts in our search for the missing men, and could learn from their logs just what happened after they were frozen in and where they drifted before they were abandoned by their crews or before the last man perished. What gruesome stories some of them will have to relate! Harrowing tales of misery, disaster, starvation and blizzards could surely be told by the men who left those valuable records—if they were alive. And why should not some of them still be alive on some unknown land to the north? Stranger things have happened.

Another opportunity for achievement which might appeal to an aviator temperamentally suited for an Arctic expedition would be the first America-to-Asia flight, from Nome, Alaska, to East Cape, Siberia, which is, I think, only about 160 miles.

Regarding work of a scientific nature: the interior of Wrangel Island, Siberia, could be explored and mapped; the continental shelf from Point Barrow, Alaska to Banks Land, Canada, could be located and charted, and the western shore of the Arctic Archipelago could be accurately determined. The last named projects, if carried out, would be immensely valuable contributions to science—and each can be carried to its most successful conclusion only by the invaluable aid of the hydroaeroplane.

They might, at the end of the cruise and if ice conditions would permit, return to New York via the Northwest Passage, but by a different, and, Arctic skippers say, a more practicable route than that which Amundsen discovered.

In short, the possibilities for the hydroaeroplane in doing useful work in the Arctic are almost unlimited; they could easily keep four machines busy, and the work would be most interesting to anyone, whether he be scientist, layman, or adventurer.

Another possibility which might appeal to the sportsman would be the discovery of a bowhead whale carcass frozen fast in the ice. Without doubt, it would be surrounded by from fifty to eighty polar bears, and the aviator could not be censured for

thinking seriously before volplaning to the ice and disturbing the feast.

Any new land viewed for the first time must be interesting to the discoverer, but a special significance is attached to the land which may lie within the million or so of square miles of unknown area lying north of Alaska and Siberia, because it is the largest unexplored region in the world. But for the invention and rapid improvement of the hydroaeroplane or some method other than the faithful dogs hitherto used by explorers, this entire area would probably remain unexplored until doomsday, as it would be most unwise to enter the vast ice fields of the Arctic and risk having one's vessel crushed by the grinding floes.

If they stayed during the winter there would be dog driving, caribou, moose, musk-ox, polar bear, mountain sheep, Barren Ground grizzly bear, wolf and fox hunting and other forms of recreation, in fact, after the men were found, the relief expedition might well automatically become a huge hunting expedition. Stefansson would not care to return to civilization as he has mapped out several years of research work in the Arctic and doubtless would prefer to rejoin his command. The others could be brought to Point Barrow or Nome, whence they could take passage on a passenger steamer for their respective homes.

Hydroaeroplanes have never before been used in the Arctic, but there is absolutely no reason why they should not be most successful there, as the weather conditions in summer closely approximate those of late September days in New York. Of course, they could not be used to advantage during the winter months, but in the months of March and April, when polar bear hides are "prime" an aviator could fly out to a point several miles from shore and could undoubtedly capture or kill many of these magnificent beasts.

The possibility of "taking" important films, of inestimable value, is also to be considered.

In conclusion, let me say that if you know of any sportsman who would be interested in the program I have outlined and will bring him in touch with me, I shall be grateful beyond words and can promise him the time of his life if he cares to go up into the Arctic.

Very truly yours,  
BURT M. MCCONNELL,

*Formerly Secretary to Vilhjalmur Stefansson and Meteorologist, Canadian Arctic Expedition.*

The cause is a worthy one and a young sportsman with the necessary resources will find a task worthy of his mettle and an opportunity to attain that kind of distinction that goes down in the pages of history.

## The National Aeroplane Competition

(Continued from Page 101)

An estimate of possible returns from the 1200 cities can be made by allowing for only 5 per cent. offering prizes of from between \$3,000 and \$5,000 each. This would amount to not less than \$150,000, and might amount to as much as \$300,000 in prizes from cities.

### Each State Asked to Enter One Aeroplane

A letter has been sent to the Governor of each of the 48 states, suggesting that, as the Competition is principally for the purpose of developing aviators for the National Guard and the Naval Militia and carrying mail, each state can, at a small cost, enter an aeroplane in the Competition, which will fly the state's colors. If it is preferred, aviators can fly for the state exclusively during the Competition, and the money won in prizes may be used thereafter for supporting the aviation corps of that state. Another certain result of this competition between states will be a constructive competition of great popular interest which will have a sporting, scientific and military value.

### Military Organizations, Educational Institutions, Yacht and Automobile Clubs Asked to Co-operate

Military organizations, educational institutions and yacht and automobile Clubs are being asked to co-operate to widen the field of interest in National Aeroplane Competition.

The Military organizations are asked for their general support in the organization of the Competition, and in getting men already connected with the National Guard and Naval Militia to learn aviation—to continue their interest in which, one condition in the contest will be that aviators participating and winning prizes to the amount of \$7,500 and upward will agree to put themselves and their machines at the disposal of the National Guard and Naval Militia, free of compensation, for 15 days during the ensuing year, their expenses and costs to be paid, of course, by the organization availing themselves of his services.

To the educational institutions the Committee urges their participation in this new art of flying, which offers in its prospective stage so many opportunities for youths now being pre-

pared in colleges and universities for active life. Aeronautics is just becoming related to every branch of human endeavor, and every day something happens which makes us realize new possibilities. No movement ever became world-wide in so short a time; no other invention has revolutionized military things so thoroughly as to create a new arm and make it necessary to reconstruct the fundamentals of tactics; nothing else promises in its prospective stage such valuable services to the human race as aeronautics.

Nor has any movement or invention ever opened such wonderful possibilities or offered such stupendous rewards to those who become connected with its advance. It has much to give for investments of time and capital. Aeronautics today is the only field that is not exploited; it offers stupendous rewards in gold and distinction for services rendered. Through the tremendous strides forward of aeronautics there are wonderful opportunities shaping themselves: possibilities for the employment of ingenuity, genius and skill of unlimited scope; business opportunities greater than have ever been created by progress in any one line of human endeavor; problems of engineering as huge as were solved by Goethals, McAdoo and other master builders; judicial and legal questions to be decided as stupendously difficult as any Gladstone would wish to have them; possibilities for the development of world-wide peace greater than ever were conceived; problems of transportation to be solved by the application of the aircraft as wonderful as any economist could wish; opportunities to gain distinction splendid enough to satisfy the most ambitious person.

The co-operation of automobile and yacht clubs is solicited to interest the people who participate in these kindred branches of sport. In many states there are no Aero Clubs, so the Contest Committee is urging the automobile and yacht clubs to form aviation sections with a view of organizing local Aero Clubs and handling this Competition. Where Aero Clubs do exist, the co-operation of automobile and yacht clubs is no less valuable, and it is urged that every effort be made to have representatives of leading automobile and yacht clubs of every state to co-operate with the Aero Clubs of that state.





### Heinrich Company Has Contract for \$200,000 Worth of Aeroplanes

The Heinrich Aeroplane Company has closed a contract for the purchase of a newly constructed stone and concrete factory for the manufacture of aeroplanes for one of the warring nations. Fortified with a contract for \$200,000 worth of aeroplanes to be shipped during April, May and June to Europe, the Heinrich Company opened negotiations for the building, located on Merrick road, 200 feet east of Main Street, and the flyers will be built there.

The Heinrich Aeroplane Company, it is rumored, has paid \$30,000 for the Hanse-Palermo site, and in addition has taken over a tract of land leading southward to the Great South Bay, on which tests and demonstrations will be made. The building is 108 by 80 feet and embraces an additional site immediately adjacent of 75 feet southerly.

The new company will take possession next week and will produce the first machine for shipment on April 23rd.

Albert Heinrich, when asked concerning the contract for the supplying of aeroplanes, replied that he is pledged to secrecy, but declared that every part of the machines to be sent abroad will be American made, and so designated.

### Thomas Brothers Build Aeroplanes for Foreign Power

The Thomas Brothers Aeroplane Company of Ithaca, N. Y., has received an order from one of the allied governments participating in the European war for a number of military flying machines of the tractor type. The amount involved is about \$100,000.

The order is a rush one and it will require several months to fill. Fifty men are working at the Thomas plant in day and night shifts. Special precautions for the guarding of the plant have been taken.

The big order verifies the expert conclusion that the military type of tractor recently completed and tested successfully by the Thomas Company is perfect in detail and practical in construction. Since the tests the eyes of the United States representatives of foreign governments have been turned on the Thomas plant with the result that this extensive new order was placed with them.

The military tractor was tested out in Ithaca several weeks ago. Frank Burnside, one of the Thomas aeronautical experts and aviators, made a number of beautiful flights over the city and vicinity and demonstrated at that time that the type of machine measured up to every requirement for warfare usage.

### The Naval Flying School

A new class of officers and men of the U. S. Navy is soon to be organized for instruction in aeronautics for the Navy, at the Navy Aeronautic Station, Pensacola, Florida. The class will be composed of ten officers and twenty enlisted men. There will be eight officers from the line of the Navy and two from the Marine Corps. There will be two lieutenant commanders, two lieutenants, two lieutenants (junior grade), and two ensigns selected from these officers of the line who have applied for this duty, and are best qualified technically and physically for the work. In the same way two marine officers not above the grade of major will be detailed. The men will be detailed from those that apply and have the best records as to charac-

ter, ability and health. A large number of applications are on file both from officers and men, and before the class is finally formed in June there will be others to be considered and to select from.

The course of instruction for officers consist of six weeks at the works of some aeroplane manufacturer, after which the actual instruction in flying begins at the aeronautic station, Pensacola, Florida. When the officers and men begin the work which requires actual flying they receive thirty-five and fifty per cent., respectively, increase of pay. The officers after a period of training and when qualified by tests laid down by the Secretary of the Navy receive an air pilot's certificate and an increase of pay of fifty per cent.

There are now four aeroplanes at the aeronautic station, specially for school work in training officers and men. Two more machines have been ordered and three more will soon be purchased. This most important work requires a number of machines that have the special qualities to fulfill the requirements of "Safety First," which is the motto of the Navy Aeronautic Service. There are at Pensacola now eight student aviators of the class of officers that was formed last year. One of these students has already qualified for his Navy air pilot's certificate: Ensign C. K. Bronson, U. S. N. The other Navy air pilots are Lieutenant T. G. Ellyson, the pioneer aviator of the Navy; Lieutenant John H. Towers, Lieutenant Commander H. C. Mustin, Lieutenants P. N. L. Bellinger and V. D. Herbst, U. S. N.; First Lieutenant B. L. Smith, U. S. M. C.; Ensign G. de C. Chevalier, Lieutenants R. C. Saufley and W. M. McIlvain, U. S. M. C. The numbers of their certificates are No. 1 for Lieutenant Ellyson and the others in the order here given.

### Army Aviators at San Diego

As the result of a flight by First Lieutenant Walter R. Taliaferro at San Diego, Brigadier General George P. Scriven, Chief Signal Officer, U. S. A., has recommended the purchase of a number of parachutes to be used as life preservers on Army aeroplanes. On the occasion of General Scriven's inspection of the San Diego station a young lady, the daughter of the inventor of the new parachute, dropped with ease a distance of 1,200 feet from Lieutenant Taliaferro's aeroplane. General Scriven is very much impressed with the merits of the new parachute and thinks it is possible that it will become as much a part of the equipment of an aeroplane as the regulation life preservers are of a ship. At least, he thinks that the invention is of sufficient merit to be given a thorough test by the Government. General Scriven on his inspection trip found the aviation section at San Diego, commanded by Captain Arthur S. Cowan, in excellent condition. There are now stationed at San Diego 29 officers and 169 men; all are doing splendid work and all of the machines are in excellent condition. As the result of the transfer on March 18th of a platoon of Telegraph Company 8 of the Signal Corps, General Scriven recommends the organization of a fully equipped telegraph company at San Antonio. He expressed the opinion that the Signal Corps school for the preliminary training of aviators should be located in the vicinity of San Diego. He found that climatic conditions and the nature of the terrain in that vicinity is especially adapted to the work of inexperienced aviators.



A customary sight at the Garden City Aerodrome, L. I. In the foreground, Albert Heinrich is seen starting a flight with a passenger, while in the background is seen the Huntington Tractor Biplane. We are indebted to Mr. J. Wesley Simrickson, of Woodhaven, L. I., for this excellent picture.



### Garden City Aerodrome

By P. C. Millman

Heinrich has been doing some flying in spite of his illness while Kantner flew almost every day this week carrying passengers. Millman flew the Huntington machine during the week for the first time in a wind and states it handled very nicely. He has also been flying the 100 Gnome Gallaudet and on April 7th flew the 90 Gyro Gallaudet for the first time. It proved to be much faster and very steady with the new motor.

Hadley, who was with Beckwith a few years ago is a new arrival at the field with a 50 Gnome, Morane Borel Monoplane. It will be ready for its trial flight next week as will also the Maximilian Schmitt Monoplane. It is expected the new Schmitt monoplane will be the fastest in this country with the 80 Gnome. It previously made 78 miles per hour with a 50 Gnome.

John Guy Gilpatric who several weeks ago flew from the field over to Oakwood Heights in his 50 h.p. Sloane-Morane monoplane returned back to the field on Thursday, covering the thirty odd miles in 34 minutes.

In spite of the strong wind which prevailed Saturday there was considerable activity. The Gallaudet, Heinrich, Huntington and Sloane machines were up and a number of passengers were carried. Among the passengers carried were:—Lieut. H. M. Poorten and Capt. Visscher of the Netherlands Indian Army, Mr. M. Ormestan of Holland, Miss Margaret Armstrong of Hampton, Va., Miss Josephine Brown of St. Paul, Minn., Mr. J. F. Hubbard, Mr. Emmet and Mr. W. B. Verplanck.

### Seek Airship Landing Sites—Clarence P. Wynne Picked by Aero Club to Select Them

Clarence P. Wynne, former President of the Aero Club of Pennsylvania, has announced that Anthony Jannus is in Baltimore awaiting a propitious time for a trip to Philadelphia in a flying boat, using the inland waterways course. The flight will be made under the auspices of the Aero Club of Pennsylvania, and the landing place will be League Island.

Announcement also was made that Lawrence B. Sperry, who was awarded a \$10,000 prize for producing a very efficient automatic stabilizer for aeroplanes, will lecture under the auspices of the Aero Club of Pennsylvania in the Central Branch Y. M. C. A., Philadelphia, on April 23rd. He will describe his invention and show motion pictures of the stabilizer in use.

### C. F. Niles Returns From Mexican War Territory Suffering From Malarial Fever

Charles F. Niles, who for the last six months has been attached to the Carranza aviation corps in Mexico, arrived in Ithaca, N. Y., recently, suffering from malarial fever. As soon as



Close view of the latest Military Martin Tractor, showing the cockpit arrangements

Niles recovers he will start on a tour of the United States. Niles will fly in New York from Governor's Island, for the benefit of the United States Army experts, and he may make other flights about the city.

Niles' manager, James B. E. Bush, is about to complete a contract for flights by Niles at the Panama-Pacific Exposition. Since the death of Beachey the managers of the Exposition are loath to make any bookings, but it is pretty certain that Niles will fly there. In New York and elsewhere Niles will loop the loop and perform all of the other stunts in aircraft.

### Putting pontoons in for Brackett Airship

The Curtiss biplane, the property of Judge Brackett, of Boston, now at the Wampanoag Club, is awaiting the arrival of pontoons which are being specially constructed for the new craft and which are expected to arrive this week. The condition of the land in the vicinity of the club was found to be such as to make flights from the lake far more desirable and immediately an order for pontoons was placed.

The work of assembling the aeroplane has been practically completed and the pontoons are all that are now needed to commence the flights.



Another view of the Curtiss Buffalo plant. In this department the 160 h. p. motors are being installed on flying boat hulls





*The Vicomte Geo. de Mauduit de Kervern, French Bleriot pilot who has come to America for the purpose of developing a biplane along original lines. This machine is being built by the Maximilian Schmitt Co.*

#### Europe's Airmen See Flying Here

Flying men from European armies and navies find much to attract them to American flying fields and aeroplane factories, which furnish one of the few sources of the supply of aircraft. The British navy has two officers at present in this city on a tour of inspection. They are Commander W. L. Elder and Flight Lieutenant Henry R. Busteed, of the Royal Naval Air Service.

Lieutenant Busteed went aloft in the Huntington tractor biplane at Hempstead Plains a few days ago and gave a finished performance at the wheel.

Captain F. J. Jenkins, of the military wing, Royal Flying Corps, accompanied the two naval officers to Hempstead Plains recently and later left the city for other flying grounds.

Holland's aviation corps is represented here just now by Captain C. G. E. Visscher and Lieutenant H. ter Poorten, of the Netherlands East Indian army. These officers came to this country by way of San Francisco and are looking at American motors and aeroplanes.

Another flying man from European battlefields who appeared at the Aero Club of America recently was the Viscount de Kervern, who holds a pilot's certificate of the Aero Club of France. The Viscount was in the field with the French forces near Dixmude, in Belgium, until a fall in a Bleriot monoplane injured his leg, which remains crippled. He is here recovering his health and incidentally to see American aeroplanes in flight.

#### Cecil M. Peoli Killed in New Biplane

While testing a new machine of his own design fitted with a 12-cylinder 150 h.p. Rausenberger motor, Cecil Malcolm Peoli fell and was killed at College Park, Washington, on April 12th. The cause of the accident has not as yet been determined, although it is supposed the accident was caused by some defect in the machine.

Peoli was but twenty-two years old. He had been interested in aviation for three years and had made several remarkable flights in South America, being the only man to successfully pass over the Andes Mountain in an aeroplane.

With the death of Cecil Peoli, American aviation loses one of its most beloved and skillful pilots, one whose heart and soul was in his work—whose ambition was to excel in whatever he undertook.

#### Sheepshead Bay Race Track to Be Aerodrome

The old Sheepshead Bay race track property has been sold for \$2,400,000 to a syndicate of motorists. The plan was launched several months ago by motorists who believed there was enough interest in automobile and aeroplane contests to make a high-class motordrome pay. At present the nearest track for big contests is in Indianapolis.

A grand stand to accommodate 50,000 people will be erected. In addition there will be large garages, a clubhouse, and also hangars for aeroplanes, and a large field will be prepared for flying machine contests.

"We expect to spend \$1,000,000 in developing the property," said Mr. Nichols. "Besides its motor features we hope to make the property a popular headquarters for sports of all kinds, and our plan embodies the laying out of a polo field, baseball and football grounds, tennis courts, and a lake for skating in Winter."

Mr. Nichols, the leader of the syndicate, said that the work would be pushed rapidly so as to give the opening motor race meet on Labor Day, Sept. 6.

#### Cicero Notes

Saturday, April 3rd, the Pallisard School machine did some excellent flying in a heavy wind.

The Aero Stabilizer's machine has been set up for the Spring activities under the direction of the Company's proprietor, Mr. Wm. Hensel. It will be piloted by Curties Gray, recent Wright graduate.

The Benoist Aircraft Co. is nearing the completion of two flying boats and also a small exhibition loop-the-loop tractor.

Art. Smith has taken the place of the late Mr. Beachey at the Exposition Grounds in San Francisco, and is doing splendidly. Mr. Robert G. Fowler, who has charge of all aviation at the Exposition Grounds, has his flying boat nearly completed, and will carry passengers with it shortly. This is fitted with one of the Hall-Scott Type A-4 motors. He expects to add to his equipment three other flying boats within a short time.

A telegram has been received by Mr. L. S. Scott from Mr. J. S. Berger, El Paso, Texas, stating he is flying in Mexico with General Villa. As his equipment he has a standard Wright, and a Curtiss with a Hall-Scott Type A-2 power plant. He states that it would be possible for him to place orders for several machines provided he could get some good aviators.

If Mr. Lyman J. Seely, representative of the Curtiss Company remains much longer in London and continues to send in large orders for motors, the Hammondsport Curtiss Motor factories will extend beyond the limits of the township of Hammondsport.



*The Stephens Flying Boat constructed by B. Stephens & Sons, of Woonsocket, R. I., and equipped with a 12-cylinder 105 h. p. air cooled Ashmussen motor*



# The Use of the Compass in Aviation

By Samuel S. Pierce

*Flying by chart and compass is still practically an unknown art in America. The notion has been that special compasses are necessary for aviation purposes, which are not obtainable in this country. As a result few long flights are made and when they are made the aviators study the topography of the country beforehand. The following article telling how a common marine compass can be used for aviation purposes is, therefore, of special interest. Mr. Samuel S. Pierce, the author, has had extensive experience. He built one of the first monoplanes in America, at Colorado Springs, 1909-10; went to Europe and won his license at the Bleriot School at Pau, France, February, 1911; gave flying exhibitions in Belgium and Austria in 1911; worked as ordinary workman in the Bleriot School and factory and Gnome motor factory for eight months to learn construction; has been pilot and instructor for Bleriot ever since. In that connection he was given charge of the aeroplanes and flying corps of the Serbian army in the Balkan war, in 1912-13; was in charge of the aviation school at Cairo, Egypt, in February and March, 1914; looped the loop at Bic, France, in June; organized Lt. Gran's flight and prepared his machine at Paris, France, and Cruden Bay, Scotland, June and July; taught English officers to fly at Brooklands, England, in August. Mr. Pierce is now connected with the Curtiss Aeroplane Co.*

THE compass is, of all instruments auxiliary to mechanical flight, probably the least understood and the most abused. It has been my experience that most aviators who have in their machines a very fine compass with most complicated drift and variation scales for sitting on the outer edge of the bowl, prismatic glass, etc., have never steered a mile by ordinary compass in a small boat, and often do not notice whether the bowl by careless handling is set with the lubber line in front or behind!

Needless to say this proves that the compass only serves to show them that, say, they are not going due east when their course is "roughly" north!

Probably the very best and quickest way to learn the proper use of the compass is a cruise in a small boat. Anyone who has made a passage of over a hundred miles out of sight of land in a small sail or motorboat, entirely on his own responsibility and with a strictly amateur crew will have a sufficient knowledge of the compass to use it successfully in aviation and it will also teach him how to lay out a course on a map or chart as well as many things about the wind, which, otherwise he would have to learn from sheer and bitter experience, often at the risk of his life—or from highly technical articles on meteorological conditions and wind currents written by people who have never been afloat or in the air.

The compass in itself should, in the first place, be an ordinary liquid ship's compass, entirely free of all complicated accessories. Second, it should be of sufficient size to insure steady action not only of the card but also of the bowl in its gimballs and to be easily read, that is the card should be at least six inches in diameter. Third, the compass should be set in the centre of the axis of the aeroplane so that the local deviation due to the metallic mass of the motor will be nearly the same on an easterly and westerly course, thus simplifying the corrections; also because if the compass is to the right or left of the aviator the line of vision from his head to the lubber line will fall to the right or left of the centre of the card, thus rendering the reading slightly inaccurate and very difficult. Instead of being able to drop his eyes from the horizon ahead directly onto the lubber line card of the compass, he will be obliged to look down and sideways and "hunt" for the lubber line; moreover, he will not be able to take bearings correctly of objects on the horizon ahead. Fourth, I have found that placing the centre of the bowl about 20 inches in front and 8 inches below the pilot's eyes gives the best results, and in this position even a very large instrument does not in any way interfere with the ordinary standard "stick" control. Fifth, after the compass has been installed, the aeroplane must be "swung," and a correction card made out. This is better than attempting to compensate the compass, as this will add weight to an already heavy instrument, as well as taking up a great deal of valuable space.

The operation of "swinging" is very simple though somewhat tedious. The aeroplane having been placed in a field, a large movable compass is placed some ten yards behind it. Next a string is stretched carefully along the axis of the fuselage, taking the centre of the propeller hub and centre of rudderpost as determining points, and continued over the movable compass, which is shifted back and forth until the centre of its card falls directly under the string.

We now read both compasses, using, of course, the lubber line in the aeroplane and the string for the other compass. As the compass outside is far enough away to be entirely unaffected by any iron or steel in the aeroplane it gives the true magnetic north after correcting for local variation. We can now begin to make out the correction sheet. Suppose the outside compass reads E and the aeroplane compass E by N; we simply write:

for E steer EbN.

We now move the aeroplane and outside compass and string until they line up again on the next point and make out its corresponding correction, and so on all the way around for the 32 points, or if degrees are used, every 10 degrees. *This entire operation must be carried out with the motor running.*

In certain positions the compass will be found to oscillate continually and care must be exercised in taking the average. The compass will not oscillate in flight.

In laying out a course for a flight near the coast or near navigable waters, the problem is very simple, as one can obtain always a government coast chart.

Unfortunately, for flights inland, none of the usually available maps have the compass card printed on them, nor the local variation, nor even the meridians and parallels, if they are large scale maps.

These points have all been strongly demonstrated by the success of Lt. Trygve Gran's flight from Scotland to Norway, 242 sea miles of open ocean with no other guide on earth than the compass and (occasionally) the sun. I prepared Lt. Gran's compass exactly as described above.

Another striking example of the value of the compass when thoroughly understood and properly installed was the winning of the "Daily-Mail" Circuit of Britain by Beaumont against Vedrines. Vedrines was by far the most experienced aviator and had the fastest machine; but Beaumont was a naval officer who had learned to fly, and although he had a much slower machine he won simply by not wasting time getting lost.

The following account of Lieutenant Gran, written by the Lieutenant himself to the London *Daily Mail*, is an interesting proof of the writer's assertions:

"I can hardly believe it that I am in Norway now. A few hours ago I was sitting at Cruden Bay Hotel, in Scotland, having lunch, and now I am having tea in a lonely hut on the barren Norwegian coast some twenty miles south of Stavanger.

"Before I started out on this flight I made up my mind to write a diary under way. Well, the diary is written, but I am afraid in too few words. I did not manage more.

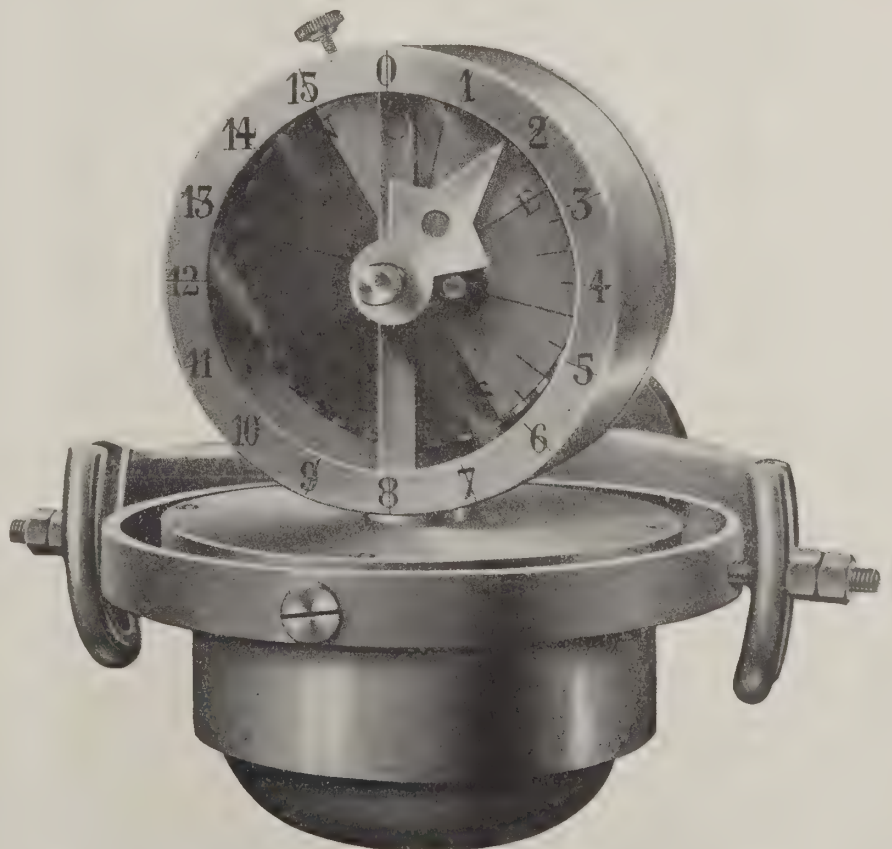
"1.15 p. m.—Under way again. The Bulls of Buchan is under me some fifteen hundred feet. I am following the coast, steering north by east. Ahead it looks very gloomy. I hope I shall not run into fog again, as I did this morning.

"1.30 p. m.—The coast of Scotland is no more. What a strange feeling to be so lonely! I have passed some ships, but now there is nothing but sea beneath me and threatening clouds above me; fifteen hundred feet up. I can judge by

(Continued on Page 116)

The new Monodep Aviation Compass (Colombel Patent). The vertical card facilitates reading and shows constantly the deviation of the line of flight from the true direction, the latter being given by the pointer which turns with the card (inner dial) after it has been adjusted to the desired angle. When the pointer coincides with the 0 point of the outer dial (which is the line of flight) the machine flies in the true direction.

For night flying the compass is lighted by a small battery giving six hours' lighting, which is enclosed in the lower tank





# Foreign News

Reported by L. d'Orcy and Robert Pluym

## Belgium

A German aeroplane which had shelled Bergues, ten miles south of Dunkerque on April 8, was brought down the same day at Steenwoorde, Belgium and the aviator and observer were both killed. The machine was on its way to make another aerial raid over Dunkerque when it was compelled by French and British high-angle guns to turn back.

## France

The French military authorities have received precise information concerning the results of the bombardment carried out by British aviators in Belgium on March 26.

The dirigible hangar at Berchem-St. Agathe was seriously damaged, as was the dirigible sheltered therein. At Hoboken the Antwerp naval construction shipyards were destroyed, two German submarines were wrecked and a third damaged, while forty German workmen were killed and sixty-two wounded.

Another daring exploit has been added to the long list of those successfully carried out by Adolphe Pegoud, the famous French aviator, when on April 2, he attacked and brought down a German Taube near Saint Menehould while he was alone on patrol duty.

The report of the incident says that when Pegoud saw the German approaching, he flew rapidly toward the hostile aircraft and sent it to earth with a few well placed shots. Pegoud then landed beside the Taube and took prisoner the German pilot and his observer, neither of whom was injured.

Earlier in the same day Pegoud is reported to have driven off three other German aeroplanes, one of which had dropped nine bombs on a railroad station.

Pegoud, who first gained fame in 1913 as the originator of the feat of flying upside down in an aeroplane, was awarded the French Military Medal in March for services rendered the army during the war.

The official report of the French War Office that was given out on April 7, describes the ever increasing activity of French aviators as follows:

"The first days of spring were marked by renewed activity on the part of our aviators, who have made a great number of reconnoitring flights and attacks upon the enemy. The results accomplished on April 2 alone comprise forty-three reconnoitring flights and twenty other flights made with the object of directing our gun fire, together with seven bombardments. Bombs were dropped in Alsace, on the hangars, and aviation camp at Habsheim, the factories at Dietweiler and the railroad station at Walheim. A bomb weighing ten kilograms was dropped upon the railroad station at Bensdorf and three others upon the enemy's barracks.

"Seven of our aeroplanes made a flight over the Woevre region, reaching as far as Vigneulles, where our observers discovered that the Germans had erected barracks covered with corrugated iron upon which our aviators rained their bombs. These bombs were seen to fall directly upon the objects at which they were aimed.

"The aviation camp at Coucy-le-Chateau, north of Soissons, and the railroad station at Comines, in Belgium, were also bombarded on the same day. In Champagne, eight 90 millimeter shells were dropped around the station at Sommepey and four others upon the station at Dombrien. Near Ecaille and St. Etienne-sur-Suippe the enemy's bivouacs were struck by our 90 millimeter bombs. About 1,000 arrows were dropped by our aviators on the bivouacs at Basancourt and Pont Faverges.

"On April 1 two German aeroplanes were brought down, one in the region of Soissons, which was struck by a well directed rifle shot after a spirited fight, and the other over the valley of the Lys. The latter was brought down by our mitrailleuse fire, which struck the gasoline tank and set fire to the machine.

"On the same day one of our aviators cruising around the city of Rheims discovered a hostile aeroplane of the albatross type coming toward the city. He gave chase at once and exchanged a number of shots with the enemy. The German machine fell within our lines and both the pilot and the observer aboard were made prisoners.

"It is thanks to this continued activity and the untiring courage of our aviators, together with their excellent spirit, that the French Aviation Corps is to-day indisputably master of the air."

## Germany

More information is at hand about the activity of the Zeppelin factory at Friedrichshafen, which is reviewed in a report to the *N. Y. Tribune* by Gordon-Smith, its correspondent at Romanshorn, Switzerland. The report says:

"The continued series of disasters to Zeppelin airships does not seem in any way to diminish the faith of their inventor and the German people in them. I

doubt if this faith is completely shared by the General Staff, but that body always keeps its views to itself, lest it damp popular enthusiasm for anything directly connected with the war.

"As a result, greater activity than ever is shown in the Zeppelin airship building yards at Friedrichshafen. Since the beginning of the war a Zeppelin has been put together there every three weeks. I saw one make its official trials on Tuesday, March 2, and leave the next day for the balloon shed, near Potsdam. In the course of the last few weeks a number of additional workmen have been engaged at the Zeppelin yards, bringing up the total number of men employed there to more than 2,000.

"This increase has already given its results, as I was able to watch for two hours the trial trip of the latest built addition to Germany's aerial fleet. This had been put together in twelve days, which I imagine constitutes a record for the Zeppelin yards.

"It was quite the largest Zeppelin I have ever seen, a veritable 'Dreadnought of the air.' In spite of the fact that it was manoeuvring over five miles from where I was standing, I could hear distinctly the beat of its powerful engines. For two hours it was subjected to a severe test, ascending sometimes to the height of 2,000 yards, and then coming down to as many hundreds above the waters of the Lake of Constance.

"It seemed to steer admirably. In spite of its immense size it described circles and figures of eight with ease and certainty. The speed it developed must have been very great, for each time it veered off it disappeared from view in a few minutes, and when it returned its bulk grew with a rapidity that bore eloquent testimony to the rapidity with which it was traveling.

"At the same time it seems difficult to believe that any military body could credit with any great military value an aerial vessel which makes such a magnificent target for gun fire. Of course, I am speaking of such moments when it travels broadside-on. When it was approaching end-on it was almost invisible, even at a short distance.

"The attacks of British airmen have evidently inspired fear in the people in charge of the Zeppelin works, for these have been transformed into a veritable fortress by means of reinforced cement. The motor construction works, adjoining the airship building works, in which the engines are made, are also strongly protected. They, too, are naturally working at high pressure.

"The total number of Zeppelins turned out at Friedrichshafen and elsewhere since the beginning of the war is thirty-five. The number stated to have been in existence before the war was eleven. The Germans admit they have lost thirteen since August, but there is reason to believe that the number was really seventeen. This would leave a total of twenty-nine, or, including the one I saw tested to-day, thirty airships 'in commission.'

"It is curious, when one considers the ridiculously meagre results obtained by such a gigantic effort, that the popular belief in and enthusiasm for the Zeppelin airship in Germany should be practically unimpaired. It is a fresh instance of a nation hypnotizing itself into believing what it wants to believe."

The part of this report dealing with the status of the German airship fleet is highly interesting and confirms, in spite of some erroneous data, our estimate as expressed in the preceding issue of *Aerial Age*.

It is correct that eleven Zeppelins were in commission at the outbreak of the war; there were seven military (Z-2 to Z-8), one naval (L-3) and three-passenger airships (*Sachsen, Hansa and Viktoria-Luise*).

It is on the other hand most unlikely that "the total number of Zeppelins turned out at Friedrichshafen and elsewhere" (which means incidentally the Potsdam factory) "since the beginning of the war is thirty-five."

Here is why. Accepting Mr. Gordon-Smith's contention that the Friedrichshafen factory turns out an airship every three weeks (see our issue of April 12), this would give on April 1 a post bellum output of ten dirigibles, to which should be added seven built at Potsdam, where Zeppelins are built at a rate of one every four or five weeks. Some allowance of time should also be made for dirigibles under repair or reconstruction. Seventeen new Zeppelins added to eleven older ones would give a total of twenty-eight; subtracting thirteen lost would give fifteen airships in commission on April 1.

But we can even trace back the origin of the number "thirty-five" which is not at all an imaginary one. On August 1, 1914, the Friedrichshafen factory had completed the LZ-25, viz. the twenty-fifth Zeppelin built since their invention; adding to this number ten (the post-bellum output of that factory) we get thirty-five! Thus the "Zeppelin mystery seems to be cleared sufficiently."

## Norway

Military aviators, while cruising over the cliffs which line the Norwegian coast near Bergen, discovered on April 8, three German submarines which had taken refuge there.

The submarines were ordered to depart immediately or else be interned. They left.



The Henry-Farman fighting aeroplane of the French aerial fleet, fitted with a Hotchkiss machine gun that fires 600 rounds per minute

Courtesy of Flying

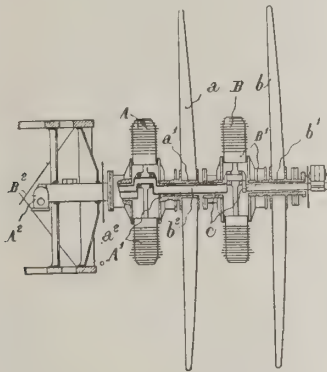


# RECENT AERO PATENTS

BY WILLIAM N. MOORE

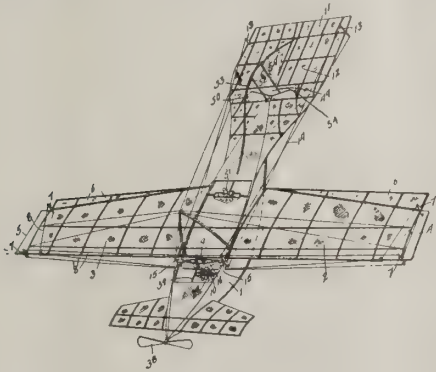
**1,132,368. DEVICE FOR PROPELLING AERIAL MACHINES.** Vladimir Lorenc and Victor Lorenc, Paris, France. Filed June 19, 1912. Serial No. 704,609. (Cl. 244—25.)

1. Propulsion mechanism for aerial machines comprising a pair of co-axially mounted propellers, independent motors for driving the respective propellers and having crank shaft means, one of the motors directly driving the external propeller, the second propeller being loosely mounted on the crank shaft means appurtenant to the motor which directly drives the external propeller and being by the other motor, the latter being mounted between the external propeller and its driving motor on the one hand, and the body of the machine on the other hand.



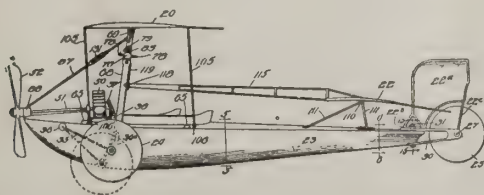
**1,132,085. AIRSHIP.** Charles Girolami, Chicago, Ill. Filed Aug. 1, 1910. Serial No. 574,764. (Cl. 244—29.)

1. In an airship, the combination of an engine separately oscillatable about an axis, a propeller rotatable about an axis intersecting the first said axis, a rotary element disposed adjacent the point of intersection of said axes, said rotary element being mounted to swing with and operatively connected to said engine, and a universal connection operatively connecting the propeller to said rotary element, said universal connection being adapted to permit an oscillatory movement of the propeller about the said engine axis.



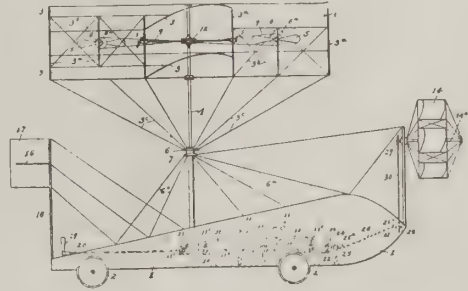
**1,131,779. AEROHYDROPLANE FLYING-MACHINE.** Bert Hartley, Chicago, Ill. Filed June 13, 1913. Serial No. 773,446. (Cl. 244—29.)

1. In an aeroplane flying machine, a frame, a warpable plane member hinged thereto and capable of both a manual and an automatic swinging movement, and controlling means for said plane, constructed to automatically warp said plane upon either its manual or automatic swinging movement.



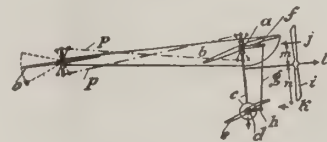
**1,132,049. FLYING-MACHINE.** Charles W. Waller, Chicago, Ill. Filed Mar. 5, 1914. Serial No. 822,543. (Cl. 244—19.)

1. A flying-machine, comprising an elongated frame, horizontal revoluble elevating and sustaining planes, propellers carried by said planes, a common driving shaft for supporting said planes and operating said propellers, propellers at the front of said frame for propelling said planes in a horizontal direction, a power plant for operating said elevating and propelling planes independently or simultaneously with each other, and steering and propelling mechanism at the rear of said frame.



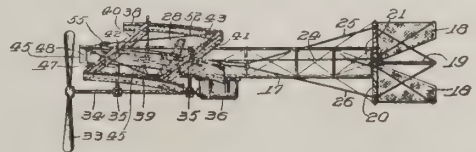
**1,132,503. AUTOMATIC STABILIZING APPARATUS FOR FLYING-MACHINES.** Otto Wittkowski, Dusseldorf, Germany. Filed Oct. 6, 1914. Serial No. 865,601. (Co. 244—29.)

1. In a flying machine, the combination with the body, and a plane for steering the same vertically, of a pendulum on said body adapted to control said plane, and automatic means in movable relation with the pendulum for varying the air resistance of the pendulum according to the inclination of the body to the direction of the flight.



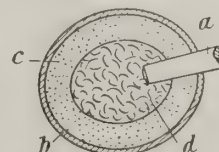
**1,132,288. FLYING-MACHINE.** Edward Wanton Smith, Philadelphia, Pa., assignor to Frederick A. Blount, Philadelphia, Pa., and Clifton C. Hallowell, Penfield, Pa. Filed Feb. 18, 1910. Serial No. 544,573. (Cl. 244—29.)

1. An aeroplane having means for increasing the supporting surface at one side and contemporaneously decreasing the supporting surface at the other side, each by means of local parallel planes, said planes being at all times parallel to the aeroplane and arranged to be variably spaced from its surface.



**1,131,888. STEERING-WHEEL FOR MOTOR-CARS AND FLYING-MACHINES.** Willy Wolff, Nuremberg, Germany. Filed Mar. 6, 1913. Serial No. 752,274. (Cl. 74—33.)

1. A steering-wheel comprising a hollow circular celluloid rim, a filler therein composed of a hardening material, a spider, and spokes on the spider projecting with their ends into the body formed by the rim and the filler.







Aeronitis is a pleasant, a decidedly infectious ailment, which makes its victims "flighty," mentally and physically. At times it has a pathologic, at times merely a psychologic foundation. It already has effected thousands; it will get the rest of the world in time. Its symptoms vary in each case and each victim has a different story to tell. When you finish this column **you** may be infected, and may have a story all of your own. If so, your contribution will be welcomed by your fellow **aeronuts**. Initials of contributor will be printed when requested.

#### Eagles to Fight Aviators

Among the classic legends of aviation is Védrières' Eagle. Not that it ever existed, but because it has established a foundation on which an imaginative mind can develop eagle yarns that will surpass even the wildest of the celebrated fish yarns by many miles—no matter what odds are given.

Védrières' eagle story originated after that aviator had won the Paris-Madrid race. Having been the only competitor to start on the last lap that was to take him from San Sebastian to the Spanish capital and realizing that public enthusiasm for a one man race may be luke warm, Védrières set himself to hard thinking while he was flying over the dreary Guadarrama mountain range, and when he alighted at the Quatro-Vientos aerodrome, near Madrid the amazed public learned with horrors of a heroic duel Védrières had to fight with a huge eagle that deliberately attacked his mile-a-minute monoplane. The next day Védrières had become the idol of Madrid.

The latest development of the eagle yarn appears in the Pittsburg, Pa., *Leader*, as a quotation from the New York *Tribune*. It is headed "Eagles to Fight Aviators" and runs as follows:

For the protection of the pilots of its wonderful fleet of aeroplanes the French War office has devised the amazing scheme of employing golden eagles to harass the enemy—such, at any rate, is a statement made by a writer in the well-known German sporting review *Allgemeine Forst und Jagzeitung*.

Paster Schuster, who is responsible for this story, took up ornithology after retiring from the pulpit, and writes with an assumption of assurance and with an impression of intimate acquaintance with the facts of the case. He implies that he has recently visited the French aerodromes at Chalons and Nice, where he says, the birds are kept, and where he has seen them. His description of the procedure is as follows:

"The military at Chalons and at Nice have brought six eagles, which are to be employed in attacking the aviators and aeroplanes of the enemy, for a successful attack on aeroplanes could be made by powerful birds flying against the machines and rendering them unserviceable.

"First, the eagles are accustomed to the roar and rattle of the machines, to the sound of gun fire; this lesson lasts three weeks. Model flying machines are made, to which scraps of meat are fastened, and in the meantime the birds are kept on starvation rations.

"Then when the aeroplanes are thrown into the air the eagles fly at the scraps of meat with tremendous force and thus destroy the models. Later the birds are expected to wound the pilot with beak and claws, rendering him hors de combat."

The author of this yarn forgot to mention that fortunately there are extensive salt mines in Austria and the German and Austrian aviators will have a supply of salt to use to catch the eagles with.

#### Beechisms

We hope when we are again invited to go for an automobile ride that the driver will keep all four wheels on the ground all the time: an automobile is not a vehicle to fly in.

Those who think \$15 too much to pay for a ride in a flying boat can always get a street car ride, which is nearly as safe, for a nickel.

Heard through the hangar door:

"No, marm, there is no place to sleep on an aeroplane;"

"No, Missy, they won't admit an aviator into heaven with his machine,—at least, not through the front gate;"

"Will he pay you a hundred dollars to go up? No, we have only ninety-nine dollars ninety-nine cents in the treasury."

The tug of war seems to be between the managers of the "safe and sane" pilots of flying boats trying to convince prospective passengers that flying is safe, and the managers of the "World's Greatest Dare-devils" who try to convince their patrons that the daredevils may meet a terrifying death at any instant.

Flights of imagination frequently reach the investor's pocket.

What has become of the old-fashioned hangar hanger-on who used to present a card bearing the inscription: "Aviator, Designer, Aeronautical Expert and Promoter of Aviation Meets?"

It is reported from the South of Georgia that a Buzzard fell and broke its neck trying to imitate an aeroplane flying upside down.

Birds should be warned not to attempt new tricks without proper tuition.

We recently made a flight from a resort outside Savannah to the Isle of Hope to fill an engagement for Mr. Barbee, the "Terrapin King." Mr. Barbee, to make his place more popular is acquiring a zoological collection. After making the flight we were accosted on the street by an admirer as follows:

"Ah, Mr. Beech, I saw the flight. It was a beautiful sight. So you are at Barbee's now, eh? Well, you'll be a valuable addition to his new zoo."

By A. C. Beech



#### Repelling The Invader

"Hurry up wid de ammunition! De outpost reports de enemy in force comin' wid a biplane, military balloon an' an armored car."

N. Y. GLOBE



# MODEL NEWS

BY WALTER H. PHIPPS

## CLUBS

**THE AERO SCIENCE CLUB OF AMERICA**  
29 West 39th Street, New York City

**PHILADELPHIA MODEL AERO CLUB**  
2208 Brown Street, Philadelphia, Pa.

**PACIFIC NORTHWEST MODEL AERO CLUB**  
915 Ravenna Boulevard, Seattle, Wash.

**LONG ISLAND MODEL AERO CLUB**  
401 Grant Ave., Cypress Hills, L. I.

**BAY RIDGE MODEL CLUB**  
6730 Ridge Boulevard, Bay Ridge, Brooklyn

**CONCORD MODEL AERO CLUB**  
Concord, Mass.

**SUMMIT MODEL AERO CLUB**  
26 Shady Side Ave., Summit, N. J.

**THE ILLINOIS MODEL AERO CLUB**  
Room 130, Auditorium Hotel, Chicago, Ill.

**MILWAUKEE MODEL AERO CLUB**  
402 Bradford Ave., Milwaukee, Wisc.

**CONCORD MODEL CLUB**  
c/o Edward P. Warner, Concord, Mass.

**AERO CLUB OF ST. LOUIS**  
Columbia Bldg., 8th & Locust Sts., St. Louis, Mo.

**MODEL AERO CLUB OF OXFORD**  
Oxford, Pa.

### Aero Science Club, April 19th, 1915

*Report by George A. Cavanagh, Secretary*

The Aero Science Club of America held its annual election of officers on Saturday, April 10th, 1915. A large number of members were present. The result of the election is as follows:

*President*, Mr. Charles V. Obst  
*Vice-Pres.*, Mr. George Bauer  
*2nd Vice-Pres.*, Mr. Walter H. Phipps  
*Secretary*, Mr. George A. Cavanagh  
*Rec. Secretary*, Mr. George F. McLoughlin  
*Treasurer*, Mr. Frank Broomfield  
*Director*, Mr. Edward Durant

The entire Club expressed its satisfaction over the election of the new officers and offered its whole-hearted support in their behalf. With bright prospects for aviation in view and election of officers now over the Aero Science Club has determined to enter the coming year on its records as one of the most successful of any in its career.

On April 18th, the club will hold its first speed contest of the year and many members are scheduled to participate. This is expected to be one of the most successful meets the Club has ever held.

In view of a successful year to come the Aero Science Club has appointed a committee on Gliders and it is hoped that before long a glider will be built, and numerous stability tests made. Mr. Walter H. Phipps, a member of this committee, has offered his support. Mr. Louis Fenouillet, another member of this committee and who has been fairly successful with gliders around New York, will also assist in this respect.

Mr. Frank Schoeber and Mr. Rudolph Funk were present and gave a very interesting lecture on their successful Model Aero-plane Motors. Both these gentlemen are members of the Club. Mr. Burinelli of the A. B. C. Aviation Co., offered the Club the use of an aeroplane on which both he and Mr. Armour Selly, worked during the past year. Mr. Armour Selly is well known through his connections in the Model field. The Club thanked both these gentlemen for their kind offer and assured them of their willingness to utilize their gift. Mr. Harry G. Schultz was appointed a member of the contest committee and also Mr. A. K. Barker. In view of the fact that both are successful model flyers it is expected that their efforts in this respect will be of great assistance to the club. In view of the recent arrangements to convert the Sheepshead Race Track into a general outdoor sport field, Mr. Edward Durant, director of the Club will endeavor to obtain for the Club the privilege of holding contests on the Aviation Field.

### Illinois Model Aero Club

At the last Friday evening meeting of the club a most inspiring lecture was given by Mr. R. J. Hoffmann, an Austrian Aeronautical Engineer who is studying aviation in this country under the direction and pay of his government.

Mr. Hoffmann has several patents on devices which simplify many phases of theoretical and practical aviation.

A practical science department was established in the club

which will be under the direction of Mr. Hoffmann. The first experiments will be along the lines of propeller and rubber testing.

Mr. Arthur E. Nealy, one of the champion model flyers of the world, has recently been appointed Assistant Secretary of the Aero Club of Illinois. Mr. Nealy has been for a long time one of the foremost Model Flyers of the Illinois Model Aero Club.

### The Frank Schoeber 3-Cylinder Compressed Air Motor

Although there is considerable controversy as to the relative merits of power and rubber driven models, there is no doubt that each has its respective field of use.

While rubber driven models can be built to give equally as instructive results as the power-driven types, there is, nevertheless, an added prestige given to power driven models, in the eyes of scientific men. If for this reason alone power models become more universally used it will do much to advance the science of model building and flying.

That model builders realize this is evidenced by the increased interest which is being taken in small steam and compressed air



*The Schoeber 3-cylinder compressed air motor, fitted with a 3-bladed propeller*





ANTONY JANNUS

ROGER JANNUS

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RAYMOND PYNCHON & CO., General Agents, 111 Broadway,  
NEW YORK

motors and the numbers of new types which have made their appearance during the past few weeks.

Amongst the most promising of these is the little 3-cylinder compressed air rotary developed by Mr. Frank Schoeber and R. Funk, which is illustrated on page 115.

As will be seen this little engine is remarkably simple and businesslike in appearance. It weighs complete with tank and all equipment only 14 oz. and has a bore of  $\frac{3}{8}$  inch with a stroke of  $\frac{1}{2}$  inch. The cylinders which are three in number, are stamped brass shells, very strong and light;—the pistons being ebony fibre. The crank-case is built up from a small piece of brass tubing and is drilled out for lightness.

Crankshaft is hollow, and is supported at the rear by a special bearing which acts as a rotary valve, admitting the intake through the crankshaft and letting the exhaust out through the specially constructed bearing.

Tank construction is 30 gauge sheet bronze wire wound and fitted with spun brass caps. The actual weight of the engine alone is  $2\frac{1}{2}$  ozs., the tank and fittings weighing  $11\frac{1}{2}$  ozs.

These motors will be made in smaller and lighter sizes to sell for \$15.00 and will be handled by the Model Supply House which will gladly supply further details in regard to them.

### New Flyer Described

A meeting of the Philadelphia Aero Club, at its headquarters at the Automobile Club of Pennsylvania, No. 23 South Twenty-third street was enlivened last Saturday night by a discussion by Percy Pierce and J. A. Conrow of various types of machines.

Several hundred models have been built, thoroughly studied and lectures delivered by prominent aviators and Government experts, all devoted to eliminating the weak points and producing a perfect flying machine. At present the club is completing a tractor biplane, powered with a 30 H. P. Gray Eagle motor. The machine is of original design and constructed much stronger than the average modern machine built in this country. The body or "nacelle," containing the motor at the forward end and the seat for the aviator at the rear is located between the planes. The chassis, of two skids and wheels, is connected directly with the body. Outriggers connect the non-lifting tail with the machine.

The original design was planned by Pierce, now president of the club, but has been thoroughly remodeled. The control is a new type and was constructed by J. A. Conrow.

### The Use of the Compass in Aviation

(Continued from page 111)

the "white horses" that it is blowing fresh from the northwest. I allow for drift, and steer northeast.

"2.15 p. m.—One hour gone. I have made up my mind to carry on. It must be done now. Writing is difficult. The machine is thrown a good deal about. *The compass works splendidly, thanks to my friend Pierce (Mr. S. Pierce of the Bleriot School, Lieutenant Gran's technical adviser).* Some fog now and then, but I have seen the sun and checked my course.

"4.05 p. m.—I hardly know what to believe. Thick fog, and, as far as I can judge, a strong northwest wind. The motor works to perfection, but somehow my big petrol-tank has run empty. No vessels about, but I cannot see many hundred yards ahead of me.

"This is the last entry in my diary. From this moment it cleared a little and the wind became stronger, and, as far as I could judge, more westerly. The machine was thrown horribly about, and I had great difficulties in keeping my course.

"At 4.20 p. m. I got into thick fog again. Up till this I had kept quite cheerful, but now I feared that my flight would finish up in the water. I felt seasick. My petrol was every moment decreasing, so it was not very pleasant.

"I started climbing. At about three thousand feet there was still fog. At six thousand feet I could see the sun. I got above the clouds and into glorious sunshine. Under me was an ocean of white clouds; ahead of me—I could hardly believe it—lay a mountainous coast with snowclad peaks. It was Norway!

"What a wonderful moment! I had done it after all! It was the Norwegian inland mountains I saw. The coastline could not be far off. I altered my course a little, cut off my petrol, and volplaned gently down through the clouds. Five minutes downwards and the blue sea appeared. I saw a little boat. I passed over a huge steamer and sailed in toward a white, sandy beach.

"At 5.17 p. m., English time, I reached land, and a minute afterward I landed on the sands of an inland lake twenty miles south of Stavanger. The journey across had taken me four hours, ten minutes, and now I am home. The machine is ready for another flight.

"I am afraid I frightened the people here in this lonely place a little. I saw when I sailed over the farmhouses here women and children run for their lives. They thought it was "the coming of war."

"I am now going to Bergen, and will arrive in Christiania to-morrow night, and the copy of *The Daily Mail* which I have carried along with me, as well as a letter from the Editor, shall be delivered to the Queen of Norway."

### MODEL AEROPLANES DESIGNS and SUPPLIES

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"WORLD'S RECORD" FLYING BOAT (Official Record Holder) Plan and instructions with full-sized hull lay-out, 50c. post paid. Plan and instructions alone, 35c.

Other Model Plans.—Phipps' "Avis" Tractor hydro-aeroplane, 25c., with pontoon blue prints, 35c.; "Long Island Racer," 25c.; Excelsior Tractor, 35c.; Bleriot Racer, 25c. Write now for complete 1915-1916 Instruction Book and Catalogue, 7c. post paid.

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\$2.50 minimum

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Forms close for this department on Monday preceding date of issue

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for aviator planning long distance flight. Must be experienced in securing exhibition dates.

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P. O. Box 607 Monroe, La.  
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open for engagement. Specialty high power, light-weight motors. If desired, can furnish designs for 180 hp. motor to weigh under 425 lbs. or as required. Six years' experience in all branches of motor design, manufacture and testing.

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Genuine Curtiss flying boat with Curtiss O X for sale at the right price. Also, Maxi flying boat with 100 hp. Maximotor six.

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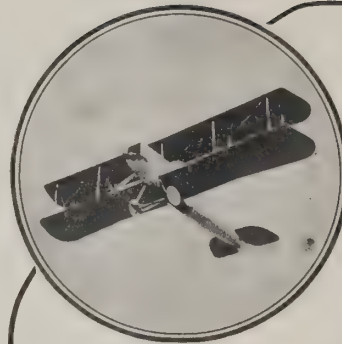
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On February 27, at Ithaca, N. Y.,  
the **THOMAS TRACTOR**  
**BIPLANE**, with 3 men and 4  
hours' fuel aboard, climbed  
4000 feet in 10 min. Average  
speed 81.1 miles per hour. Slow  
speed down to 38 miles per  
hour. Showed high degree of  
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York, N. Y., required by the Act of August 24, 1912.

Editor, G. Douglas Wardrop, 116 West 32nd St., New York;  
Managing Editor, G. Douglas Wardrop, 116 W. 32d St., New York;  
Business Manager, George B. Wagner, 116 West 32nd St., New  
York; Publisher, The Aerial Age Company, Inc., 116 West 32nd  
St., New York, N. Y.

Owners, The Aerial Age Company, Inc., Henry Woodhouse,  
Proprietor, 297 Madison Ave., New York, N. Y.

Known bondholders, mortgagees, and other security holders,  
holding 1 per cent. or more of total amount of bonds, mortgages,  
or other securities: None.

GEORGE B. WAGNER, Business Manager.

Sworn to and subscribed before me this twenty-ninth day of  
March, 1915. James L. Crawford,

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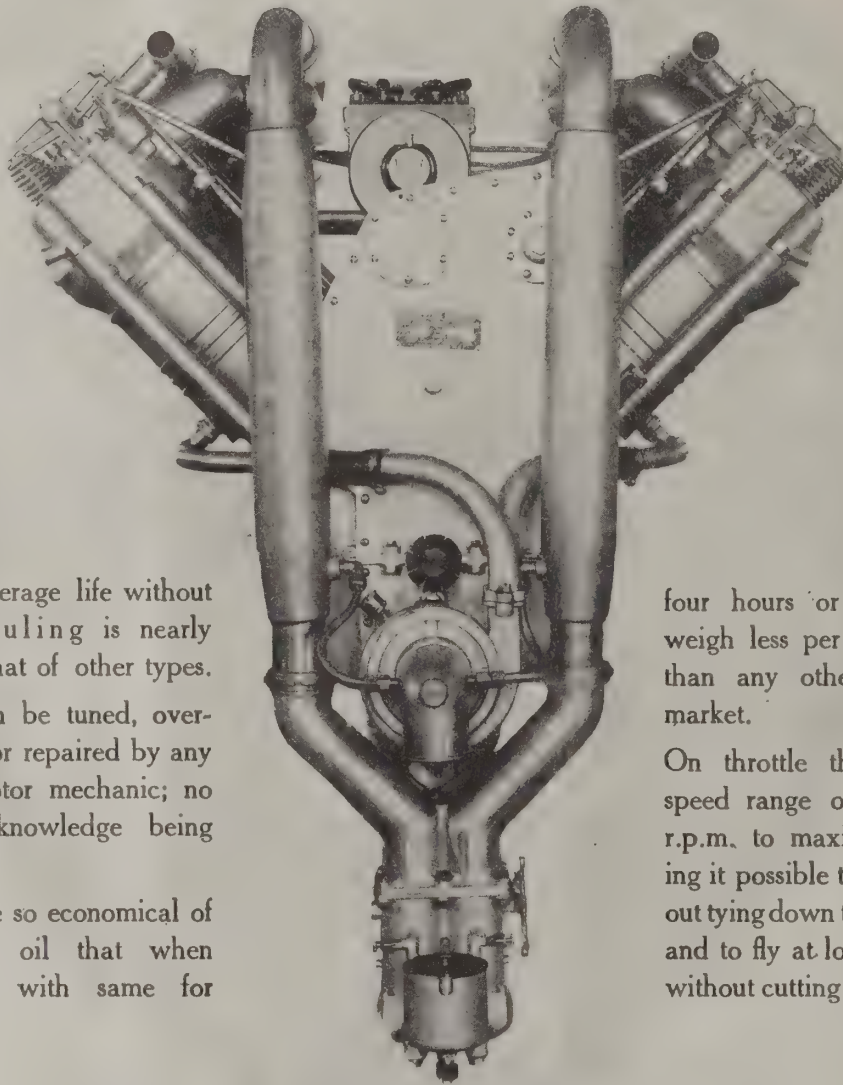
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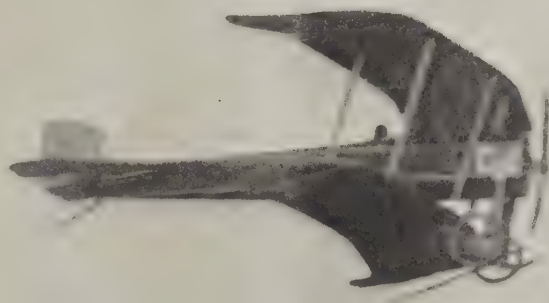
# AERIAL AGE

## WEEKLY

Vol. I. No. 6.

APRIL 26, 1915

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*Send for Booklet No. 10*



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PUBLISHED WEEKLY BY THE AERIAL AGE COMPANY, Inc., 116 West 32nd Street, New York City

Entered as Second-Class Matter March 25, 1915, at the Post Office at New York, N. Y., under the Act of March 3, 1879

VOL. I.

NEW YORK, APRIL 26, 1915

No. 6

## The Shocking Condition of Aeronautics in the U. S. Navy

THE shocking condition in naval aeronautics has been revealed by the Navy's own reports in the past few weeks.

*The United States Navy's actual flying equipment consists of but four aeroplanes—and the prospective addition of only five more machines!*

And there is no definite plan for extension in the near future. There is instead a proposition entertained to take even the limited personnel and the meager resources available and employing them for an experiment similar to one which England and France have proven fallacious and which they abandoned after a waste of \$5,000,000 and invaluable time.

The most deplorable aspect is that the Navy has no aeronautical policy. Its actions in the past three years have been most haphazard in character. Since 1912, when it gloried in the distinction of having been the first Navy in the world to recognize the value of naval aeronautics, it has been procrastinating, until in the past two years naval aeronautics in the United States has even lost the dignity of an experiment.

Plans were made, and publicity given to them, but no steps taken to realize them, and the nation, who has been waiting for the execution of the plans which it has approved, and for which it is paying, has been given, instead of an active aeronautical organization, a series of apologetic bulletins attempting to justify what cannot be justified in critical times such as the present: the failure to provide a sufficient aeronautical organization.

Bulletins have been issued periodically by the Navy in the past two years to justify its inactivity. The arguments advanced have, in their chronologic succession, been as follows:

1. The Navy was waiting to get aeroplanes having certain characteristics which would enable them to rise from and land on both water and land and have a certain speed and carrying capacity; and to develop a device for launching aeroplanes from ships. When these conditions were met the objection came forth

2. That (naturally) the over-land-and-water machine had to sacrifice some of its seaworthiness and airworthiness (just as a boat would lose some of its navigating efficiency if it were equipped with wheels, to render services as a land vehicle, and an automobile would become sluggish if it were equipped with boat equipment to enable it to navigate).

A device for launching aeroplanes from ships was tested which seemed to suit the purpose and it was reported that a number would be constructed. Nothing has been heard about this in two years.

3. The plan of the Board of Aeronautics of the Navy, providing for an adequate aeronautical organization for the Navy having been made public (January, 1914) and no steps having been taken to realize it, the Navy sought to find justification for its inactivity in statements which varied from claims to be unable to use aeroplanes on account of inability to get officers to take up aviation, to waiting to get officers until suitable aeroplanes could be acquired—a puzzling contradiction.

4. Then came the war and with that the public demand for an adequate aeronautical organization. Then the Navy told Congress that the Navy did not have aeroplanes because it could not buy certain types in Europe on account of the War! It gave that as a justification as though relying on foreign countries for means of defense were the proper thing to do for the institution in charge of defending the interests of the country, and as though the millions which it spends were not American money and did not come from taxes, levied on American people.

Then came the Naval Hydroaeroplane Competition. The

conditions for this competition were most severe and only a few weeks were allowed for constructors to submit their bids, not sufficient to enable a young industry, which had had a close career, without support or encouragement from the Government, to do justice to the proposition. This was brought to the attention of the Navy and the constructors were assured that this would be taken into consideration and due allowance made. This competition opened on February 27th, and in spite of the fact that only twenty-four days had been allowed from the announcement to the opening of the competition a dozen firms submitted bids.

Nothing more was heard about the matter until April 15th, when the following was issued:

Navy Department, April 15, 1915.

"The first contract for hydroaeroplanes since the appropriation by Congress, upon the recommendation of Secretary Daniels, of a million dollars for aviation, and provision for the organization of a Navy Aeronautic Advisory Committee, will be awarded to the Burgess Company. Bids for these hydroaeroplanes were received February 27th, of this year. It has been decided to place a contract for three machines. The proposals were invited upon supplying three or six machines. The specifications stated that the award of contract would be based upon the completeness of the proposals received as regards the data furnished, and the extent to which the designs conform to or exceeded the requirements. The data furnished by the Burgess Company is complete, and the design conforms nearer to the requirements than in any other of the proposals submitted. A tractor aeroplane is not as well suited for naval purposes as a pusher type. It was hoped that the requirements of the specifications for these hydroaeroplanes would be exceeded by the bidders. They represent a type in advance, but are not equal to what is considered desirable in the light of developments due to the war in Europe. A machine is required having a speed of eighty miles an hour or better, with a radius of action of at least seven hours, and ability to climb with full load sixty-five hundred (6,500) feet in twenty minutes. Thus it was considered inadvisable to buy more than three hydroaeroplanes in this lot. It is recognized that the development of the aeroplane in this country is retarded by the backward development of aeroplane motors. It is hoped that this advertisement and purchase of hydroaeroplanes will tend to encourage the designers and manufacturers of aeroplanes and aeroplane motors to further development to meet the immediate needs of the Navy. Proposals will be issued in the near future for more hydroaeroplanes."

Judged from past experiences this means another delay of months with another postponement at the end of it and no increase to the aviation forces, because meantime the aeroplanes now in use will wear out, and those that may be purchased will go to replace those that are no longer safe for service.

Before passing to the next subject, it may be well to point out that while Navy press bulletins of the past year show a surprising concentration of efforts to attempt to justify the Navy's failure to add to its flying equipment, they show a startling lack of appreciation for the valuable work done by U. S. naval aviators with equipment supplied by American constructors who have done their best to advance aeronautics in spite of the lack of encouragement from the Government.

One looks in vain, for instance, for an official appreciation of the valuable services rendered at Vera Cruz by U. S. naval aviators, flying American-made aeroplanes. For 43 days the aviators went up daily in hydroaeroplanes from early morning to late evening to reconnoiter principally over land although they had water machines, in flights ranging from one and one-half to three hours—remarkable in every way and of great credit to the aviators and the equipment.



What one finds, instead, is a continuous reiteration of the fact—of which the Navy can hardly be proud—that the Navy has not got a complete aviation squadron, when it should have ten complete squadrons, *because it could not get certain aeroplanes and motors from Europe!*

The Navy does not seem to realize that the explanation which it offers for not having acquired aeroplanes and formed aviation corps reflects lack of resources to say the least. The Secretary of the Navy himself as the owner of a newspaper will appreciate that this same policy applied to his newspaper, waiting to get special machinery for printing the paper until the war ends, would mean not issuing any paper at all. And yet this is just what the Navy has done.

The records of the hearings before the Naval Committee of the House of Representatives of the past session have made many aeronautical workers and patriots sick at heart.

By failing to include in the Congressional reports appreciation of the services rendered at Vera Cruz under such difficult conditions, and by making disparaging remarks about American aeroplanes and motors the Navy has laid itself open to a grave charge of total lack of patriotism and lack of understanding of the position of the Navy in the nation and its relation, as a public institution, to other institutions of the United States.

Soon after the navy competition was announced, a number of reports appeared in the press stating that the Navy was drawing plans to establish two aircraft factories. We have treated this subject in *Aerial Age* for March 22d, March 29th, April 5th, and April 12th, and have shown that the Bureau of Construction and Repair and Bureau of Steam Engineering have recommended against it in terms as strong as the following:

"The establishment of a Government plant for the general manufacture of aircraft would require a complement of officers that can ill be spared at the present time, not only because the Navy has a very limited number of specially trained designers in this class of work, but because such a plant would call for the diversion from actual flying work of many of the most competent operators. As stated above, the establishment of such a plant would tend greatly to discourage the valuable initiative and resources of private manufacturers, who should be encouraged and stimulated as a most valuable asset not only in the development of aircraft but also for turning out such craft in quantities in time of an emergency. Any government plant which could be established in the near future would be entirely inadequate in war time, as aircraft would be required in large quantities in such an emergency."

These reports have, however, continued to appear in the press and, as a climax, on April 16th, a New York paper printed an article which read as follows:

#### "PLAN FEDERAL AERO FACTORY"

"Recently Appointed Commission of Experts May Recommend the Establishment of an Experimental Airship Plant.

(Globe Bureau) (Washington, April 16)

"The United States government may go into the airship business and establish a factory for the construction of aircraft for Army and Navy use.

"That this will be one of the results of the recently appointed commission of experts to study the need of airships for military and naval purposes is not unlikely.

"Uncle Sam does almost everything from building a canal or a railroad to shipping eggs by parcels post, but never yet has he gone into the business of making aeroplanes or Zeppelins. That is, he has never done so except in an experimental way. The Army experts in aeronautics have tested out various plans for the development of aircraft, and a great deal of quiet progress has been made through these experiments.

"The new commission will meet in a short time to organize and discuss plans. What it will do is speculative, but it cannot do a great deal because it has only \$5,000 at its disposal. However, it is expected, that the commission will gather a great deal of valuable information and make recommendations that will command the attention of Congress.

"It is unlikely that Congress can be induced to make provision whereby the United States would manufacture airships on a big scale. But experts say it can help a great deal by authorizing the establishment of a small factory where machines can be turned out for experimental purposes. A laboratory also is needed. By such means the Army experts could go ahead devising new and improved types of machines.

"England, which has recently made long strides in aeronautics, has the Royal Aircraft Factory and the National Physical Laboratory, in both of which there is constant experimental effort toward improvement. What successful efforts Germany and France have made in perfecting aerial navigation is well known.

"It looks as if there would be strong sentiment in the new board to take steps toward systematic development of the airship for Army and Navy use."

This is startling. The National Advisory Committee on Aeronautics has been appointed by President Wilson to study the needs of aeronautical sciences, civil and military, and for that reason seven, or half, of its members were to be civilians "acquainted with the needs of aeronautical sciences, either civil or military, or skilled in aeronautical engineering." Acting Secretary of the Navy Franklin D. Roosevelt objected to this number, and on February 12th, 1915, wrote to Congressman Padgett, Chairman of the Committee on Naval Affairs, urging that the number of civilian members be cut down to three. The result was the appointment of only five civilians.

#### **As this committee has not yet met how can its recommendations be anticipated?**

Of course there is no objection to the Navy having an experimental factory—but it has had that and what has been defined by Assistant Secretary Roosevelt himself as "the largest wind tunnel in the world in operation at the Washington Navy Yard; the model basin at the same place for tests of floats for hydroaeroplanes; the engineering experimental station at Annapolis for tests of machinery; with the aeronautic station and center now in operation at Pensacola, with shops and facilities for all practical tests with actual aircraft or the means to provide for them."

We will not draw conclusions at this time on this point other than that it is a grave breach of ethics, to say the least, to attempt to anticipate the recommendations of a body appointed by the President. The Committee will have its meeting while this is on the presses.

In the above report the character of the proposed factory is no longer that of previous reports, which stated boldly that two aircraft plants would be established. The change is undoubtedly due to the criticisms which resulted. The word "experimental" has been introduced, and the deduction is suggested that England owes her ascendancy in aeronautics to the aircraft factory combined with the National Physical Laboratory. This is very misleading, as all the references to the Royal Aircraft Factory's contributions to making the British aeronautical organization have been.

The Royal Aircraft Factory attempted to supply the aeroplanes for the British Government between 1909 and 1912, and during those years the British Government gave no more encouragement to private constructors than the American Government is giving to American constructors. As a result in 1912, the British Government had spent around \$5,000,000 and had, according to the figures given to the House of Commons by the War Secretary, only fourteen flying officers, and seventeen aeroplanes, including—as our Navy is apt to include in reports— aeroplanes which had been discarded as unsafe for flight, and two small dirigibles.

The Royal Aircraft Factory had, it is true, done good work in a technical way, it had made extensive experiments, but it had spent \$5,000,000 and had only a handful of men and fourteen machines, without organization, or connection with the rest of the military establishment. And owing to the lack of support there were no constructors with facilities to turn out one aeroplane a month.

It is fortunate for Great Britain that public objection, and the continued criticisms of influential periodicals, forced the Government to give up its petty hobby and the Royal Aircraft Factory was confined to experimental work, and the machines were ordered from private constructors.

But for that the history of the war might read different—mournfully different for Great Britain.

Those who propose Government aircraft factories in the United States do not seem to know of this narrow escape of England. They issue incoherent jumbles of generalities in which the Royal Aircraft Factory and the National Physical Laboratory fit in loosely, and try to lead the Navy to waste the \$1,000,000 appropriation and its resources in personnel.

If the Navy is unable to make plans of its own and must follow British practice, it should begin where the reformation took place. A laboratory similar to the National Physical Laboratory would be a valuable asset to American aeronautics and public support can be had for securing it from Congress, but the Navy cannot afford to wait to form flying corps until it has been obtained, so it must begin with either buying sample machines and motors and putting them to exhaustive tests to define their values or issue orders for machines to be built on designs supplied by the Navy. Both these things have and are done by the British Government. This belongs to the experimental side of the Naval Aeronautical organization.

For the practical side, to supply an adequate flying equipment, the Navy may follow the British Government easily. The three American constructors who are filling, and the three other who are closing large orders for the British Government can supply machines which, considering that they satisfy the needs of the British Government for actual war purposes, should satisfy our Navy also.



# THE NEWS OF THE WEEK

## Vincent Astor Acquires Burgess Aeroyacht

As we are about to go to press it is made public that Vincent Astor has taken delivery of the special Burgess-Dunne aeroyacht which he ordered from the Burgess Company two months ago. Photographs and detailed description will be published in the next number of *Aerial Age*.

Mr. and Mrs. Vincent Astor are both very much interested in aviation. Mr. Astor is a life member of the Aero Club of America. The young multi-millionaire and his wife both made trips from Coronado Beach on March 30th with Raymund V. Morris in his flying boat and both instantly became enthusiasts. Morris took them to quite an altitude and both were keen to go higher. Earlier in the day they went to the army aviation camp at North Island, where they were shown about by Grover C. Loening, instructor in aeronautics and Lieuts. T. DeWitt Milling and Redondo B. Sutton. They were so interested that when they met Morris they promptly made arrangements to have him take them up. The aviator flew them, one at a time, over to their steam yacht, the Noma.

Another flight of Morris in connection with Mr. and Mrs. Astor's visit was that of flying out to the Noma to order a launch sent to the North Island Camp to carry them on their return journey to the yacht, which was then about two miles from the camp, at the naval coaling station, their speed boat having broken down when they arrived, on the trip over.

## Navy Gets Bids on Dirigibles

The Bureau of Supplies and Accounts, Navy Department, opened bids on April 20th for dirigibles for use in the Naval Service. The bids were requested on the basis of furnishing one or two dirigibles, the right being reserved by the Government to accept bids on either basis. The general specifications required that the dirigibles should be of the nonrigid type and should be about 175 feet long by 50 feet high and 35 feet wide, with a useful load of about 2,000 lbs. It is specified that the dirigibles must have a speed of 25 miles per hour or more, and to be capable of rising 3,000 feet without disposing of ballast.

The following bids were received:

Stanley Yale Beach, 125 East 23rd St., New York, N. Y.

One machine—\$29,876.00.

Two machines—\$58,552.00.

(This bid was submitted without a guarantee).

American Dirigible Balloon Syndicate, Inc., 299 Madison Ave., New York, N. Y.

One machine—\$41,000.00.

One machine (larger)—\$45,000.00.

The Connecticut Aircraft Company, 42 Church St., New Haven, Conn.

One machine—\$45,636.25.

Two machines—\$82,215.12.

The Goodyear Tire & Rubber Company, Akron, Ohio.

One machine—\$200,000.00.

(This bid is subject to a reduction which will make the total cost to the Government equal to the cost of the machine to the Goodyear Tire & Rubber Company plus 50%. The amount entered as the bid is the maximum to be charged under any condition).

In discussing the new dirigible aircraft now to be bought, Frank D. Roosevelt, Assistant Secretary of the Navy, said:

"Our dirigibles and scouts must protect the dirigibles from the anti-aircraft guns of the enemy's ships, also our aeroplanes must fight off the enemy's aircraft that wants to attack our dirigible. These two first dirigibles are of the smallest size that will be serviceable for training and experiment to develop officers and men for this service and obtain the necessary experience to produce a large dirigible fleet. These small dirigibles will also develop the manufacture of modern dirigibles in this country, which is a new departure for our aircraft designers and manufacturers."

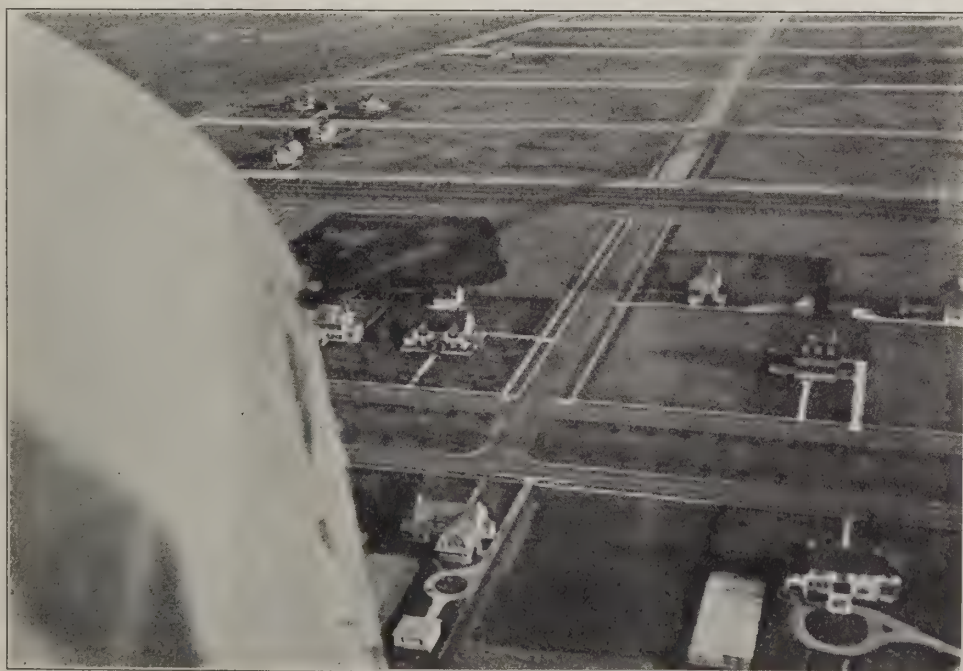
## Morris Flies to U. S. Flagship and Greets Vice-President, Admiral's Guest

While Vice-President and Mrs. Thomas R. Marshall, and Assistant Secretary of the Navy Franklin D. Roosevelt were being entertained by Admiral Thomas Benton Howard, commander in chief of the Pacific fleet, with a reception on board the flagship Colorado, Raymund V. Morris, the aviator, flew from North Island in his flying boat to pay his respects to the distinguished guests.

Morris circled around the ship three times, and then came alongside the boom, where he was met by a launch which took him to the gangway. After chatting with the vice-president and secretary for a while, and joining in the dancing on the quarter-deck, Morris boarded his craft and flew back to North Island.

Vice-President Marshall is much interested in aviation, and particularly in the flying boats, and it was in a previous talk with Morris that he had asked for an opportunity to see the aviator handle his craft.

1111



The Garden City Estate  
Photographed from the  
Heinrich Military Tractor by  
George Page



### Aviation Corps May be Formed in Charleston, S. C.

A. C. Beach arrived in Charleston from Savannah on April 12, with a view to organizing an aviation corps of the State naval militia in connection with a recent resolution of the Navy Department to the effect that the naval militia organizations of the various States, should they meet requirements, would be furnished with two aeroplanes each and a special instructor.

It is understood that provided machines could be secured for a local corps, Mr. Beach would instruct the members in handling them.

### Officer Becomes Air Pilot

The Aero Club of America has issued a pilot's certificate to Lieutenant Shepner Ward Fitzgerald, Coast Artillery Corps, United States Army. Lieutenant Fitzgerald passed the usual test recently at San Diego, Cal., on a Martin tractor biplane, the observer being Captain A. S. Collins, of the Signal Corps.

### L. A. Vilas Resumes Activities

L. A. Vilas, the Chicago sportsman who did such excellent flying with his Curtiss flying boat last summer is planning to resume activities this season and expects to take his boat up in Northern Wisconsin. He is very enthusiastic over the plans for the National Competition and is working to aid the Committee of Arrangements.

Vilas recently demonstrated Harold F. Mc Cormick's flying boat "Edith" before Mr. B. R. J. Hassell making a number of successful flights in it before it was purchased by Mr. Hassell.

While flying in the McCormick flying boat "Edith" which he had just purchased, Mr. B. R. J. Hassell met with an accident which fortunately did not result seriously. The following is an account of the accident received from Mr. L. A. Vilas. He states as follows:—"Hassell got off the water nicely and made a very wide left turn and a nice clean landing against the wind. He then took her off the water again and was about to make a second landing, going with the wind, when he changed his mind and gave her full throttle, but the boat hit the water before he could raise her at almost a speed of sixty miles an hour. The boat hit so hard, the tail broke off and the planes and engine section turned over. Hassell was picked up by a canoe about all in, and the boat is a total wreck except for the motor."

### Bonney Goes to Fly in Mexico

W. Leonard Bonney, whose skill and daring is known to all aeronautic enthusiasts, quietly slipped out of New York recently

after making an indefinite agreement to fly for the Carranza forces in Mexico. He will take the place of Charley Niles, who recently returned to this country.

Bonney's engagement by the Carranza people was the result of circumstances that indicate the scarcity of flying men in the various Mexican armies.

In the first place the aviator was approached by the Villa agent in El Paso, who had just acquired six new Wright machines, but was minus pilots. He arranged to start for El Paso at once, but several days' delay on the part of the Villa people gave Carranza's New York representative his chance.

Therefore, Bonney was offered a larger consideration than the Villa party had mentioned and, not having made any binding agreement, accepted it. The Monterey was well out to sea when a message from the Villa agent arrived for him. It promised a stipend almost double the amount of the original offer, with a liberal advance.

Both factions in the Mexican trouble have shown much activity of late in the acquisition of aeroplanes.

### U. S. S. North Carolina to Be Seaplane Transport

Secretary of the Navy Daniels has announced that the armored cruiser North Carolina will return soon from the Mediterranean and go to Pensacola as the aviation ship. She was used in this work before being sent to the eastern Mediterranean with the Tennessee. The aviation school for the navy will open at Pensacola June 1.

Secretary Daniels also said that a number of the aviators of the Navy are abroad making observations in the European war area, and he expects these observations to prove valuable to the service here.

### Another Army Officer Qualifies for Pilot License

Aviation Certificate No. 316 has been issued by the Aero C. of America to Lieut. Redondo B. Sutton. Lieut. Sutton carried out his trials at San Diego, Calif., and qualified for his certificate in a Martin Military Tractor, Model TT, equipped with a Curtiss 8 cylinder 90 h.p. motor.

### Three Aviation Schools for Canada

The demand for aviators for Canada has resulted in the establishment of three schools at Toronto, the Curtiss School headed by J. A. D. McCurdy, the Canadian Aviation Co.'s School, established by Mr. W. A. Dean, and the Janney Aviation School, headed by Captain E. L. Janney.



View of the Wing Covering Department at the Busy Curtiss Plant at Buffalo



### Beachey's Flying Equipment for Sale

Lincoln Beachey's flying equipment is offered for sale by Frank Carroll, Van Ness and Sutter St., San Francisco, Cal. As the announcement appearing on another page shows, the late virtuoso of the air possessed three aeroplanes with complete equipment for each.

### PENNSYLVANIA NEWS

By W. H. Sheahan

Mr. Jos. A. Steinmetz, President of the Aero Club of Pennsylvania, addressed the members of the Philadelphia Aero Club at their April meeting. A most interesting lecture on "Aircraft in Warfare" was given, which was largely attended. Mr. Steinmetz has made many inventions in the aeronautical field and one of the latest Burgess-Dunne machines made for the Russian government is equipped with one of his bomb dropping devices. The tractor biplane being built by the members of the Philadelphia Aero Club is nearly finished and will be ready for trials in a few weeks.

Arrangements are progressing for the Jannus flight of their new flying boat from Baltimore to the League Island Navy Yard, Philadelphia.

It is reported on excellent authority that through the efforts of the officials of the Aero Club of Pennsylvania, permission has been granted by Secretary of the Navy Daniels, to use the Navy Yard at League Island as the official landing station for inter-city flights.

Mr. Lawrence B. Sperry is scheduled to lecture at the Y. M. C. A. Auditorium in Philadelphia, evening of April 23rd on "A Gyroscopic Stabilizer for Automatic Control of Aeroplanes." As Mr. Sperry's reputation is now international a large attendance is expected.

At the Aero Club of Pennsylvania's April meeting, held in the Bellevue Stratford, much interest was taken in the communication from the National Aeroplane Competition Committee and plans are being formulated whereby it is hoped that prominent Philadelphians will offer substantial prize money for the flights. A sad announcement was made to the members of the death of their first President, Mr. Arthur T. Atherholt, which occurred April 16th.

Out of respect the Club decided to indefinitely postpone the balloon races which Mr. Atherholt at the March meeting had planned for early May. Mr. Atherholt was the Club's most prominent balloonist and his loss is deeply felt by his fellow members.

### A. T. Atherholt Dies; Famed as Aeronaut

Arthur T. Atherholt, formerly president of the Aero Club of Pennsylvania, and Philadelphia's most noted aeronaut, died shortly after noon on April 15th at his home in Holmesburg. Mr. Atherholt on Sunday celebrated his 48th birthday anniversary with his wife and two children, Elizabeth, 13 years old, and Roselyne, 15 years old. He was then in the best of health. On Monday he was attacked with liver trouble that soon affected his heart.

### OKLAHOMA NEWS

By L. M. Allison

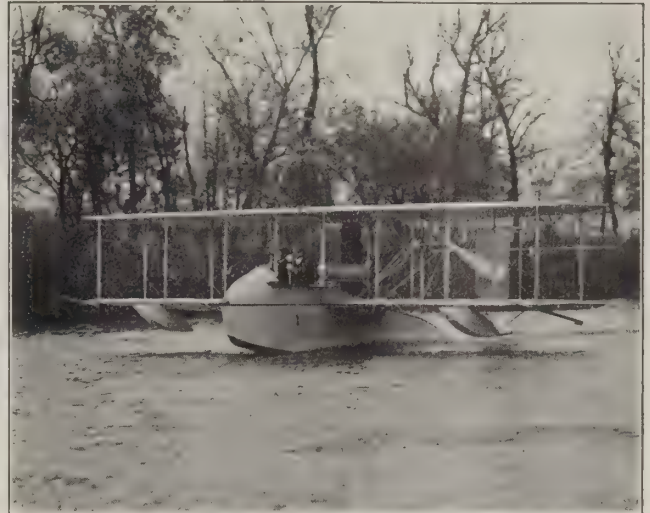
DeLoyd Thompson flew at Oklahoma City, April 22 at the 26th Centenary of the opening of Oklahoma. Barney Oldfield who used to team with Lincoln Beachey will show with Thompson.

Joe Pendhayn, the Wright aviator, will make his headquarters at Overland Park near Kansas City this year. He will have a new 80 horsepower Sopwith type and the old Day tractor he flew last year, which was formerly flown by De Loyd Thompson.

The Elliot Brothers of Lawrence are building a new 8 cylinder motor of their own design, which may be put on the market later after being tested thoroughly. The cylinders are to be machined from magnalium castings.

The Aviation Directory is getting ready to open an aviation school, using a small 2 cylinder tractor biplane as instruction machine. They plan to add a 6 cylinder machine as soon as work gets started.

C. A. Richards, the Kansas City aviator, will make his headquarters at Overland Park this summer, using a geared down tractor biplane similar to Chas. Day's first machine.



Orville Wright at the helm of the Wright short hulled flying boat

### Wright Flying Boat School in New York City

Mr. A. B. Gaines, who took his pilot license at the Wright school last year is going to bring a Wright flying float to New York and start a flying school as well as an aerial line. The school is to be located on the Hudson at 75th St., right in the heart of the city, and a dozen pupils including prominent sportsmen are registering.

### Cicero Notes

During the week ending Saturday the 10th, the Partridge School Machine made a number of flights.

The manager of the field has been having great trouble with burning grass. The hangars have been threatened and stretches of fencing burnt down.

Saturday the 10th, Mr. Hoover took his machine out for a few trial flights about the field.

### The Garden City Aerodrome

Although neither the Heinrich nor Gallaudet sheds were open on Saturday there was nevertheless considerable activity. Harold Kantner was out practically all afternoon carrying one passenger after another in spite of the high wind while P. C. Millman and John Guy Gilpatric gave demonstrations, the former on the speedy little Schmitt monoplane, the latter on the Sloane-Morane monoplane. During the week Kantner with Millman as passenger in the Huntington machine flew over to Hicksville to inspect the large Young biplane, which will shortly be moved to the field.

A new arrival at the field is the Shaw Moran type monoplane equipped with a 90 h.p. 6 cylinder Johnson 2 cycle motor, which will be flown by Ross Smith, who formerly flew the Johnson monoplane.



Harold Kantner in flight with a passenger in the 80 GYRO motored Huntington Tractor at the Garden City Aerodrome



## The Twelve Cylinder Rausenberger Engine

By Neil MacCoull

**I**N 1910 L. E. Rausenberger brought out his first eight cylinder aeroplane engine. Since then several have been constructed for exhibition and cross country flying, and have many good flights to their credit. The late Cecil Peoli used one of these engines on his flight across the Andes last year.

The latest Rausenberger engine manufactured by the City Engineering Works of Dayton, Ohio, follows the same general construction as the "eights," except that it has twelve cylinders arranged with an angle of 60° between the two rows of cylinders. This construction is particularly interesting now, because of the persistent rumors that some large American automobile manufacturer will soon place a twelve cylinder engine in a stock car. This type of engine, while not well known, is by no means untried. As far back as 1908 George Shebler, well-known by the carburetors which bear his name, built a twelve cylinder V-type engine which is still giving good service. The English Sunbeam Co. is also manufacturing a "twelve" for aeroplane work.

The Rausenberger has a bore of  $4\frac{1}{8}$  inches and a stroke of 6 inches. It is rated at 150 H.P., and the normal speed is given as 1200 R. P. M. The overall length and width are 5 feet 10 inches, and 23 $\frac{1}{2}$  inches respectively.

The cylinders are of fine grained, annealed cast iron, with spun copper water jackets which are pressed on and secured by thin steel rings, shrunk on.

Both intake and exhaust valves are mechanically operated. They are 2 inches outside diameter, with a lift of 5-16 of an inch, and seat directly in the cylinder head, no cages being used. As with most overhead-valve engines, the valves must be assembled or removed through the cylinders. A single cam shaft with twenty-four integral cams is supported by seven bearings, and operates the valves of both sets of cylinders, one cam for each valve as opposite cylinders with their push rods are staggered. The cams act on the push rod rollers directly without the use of the rockers often employed.

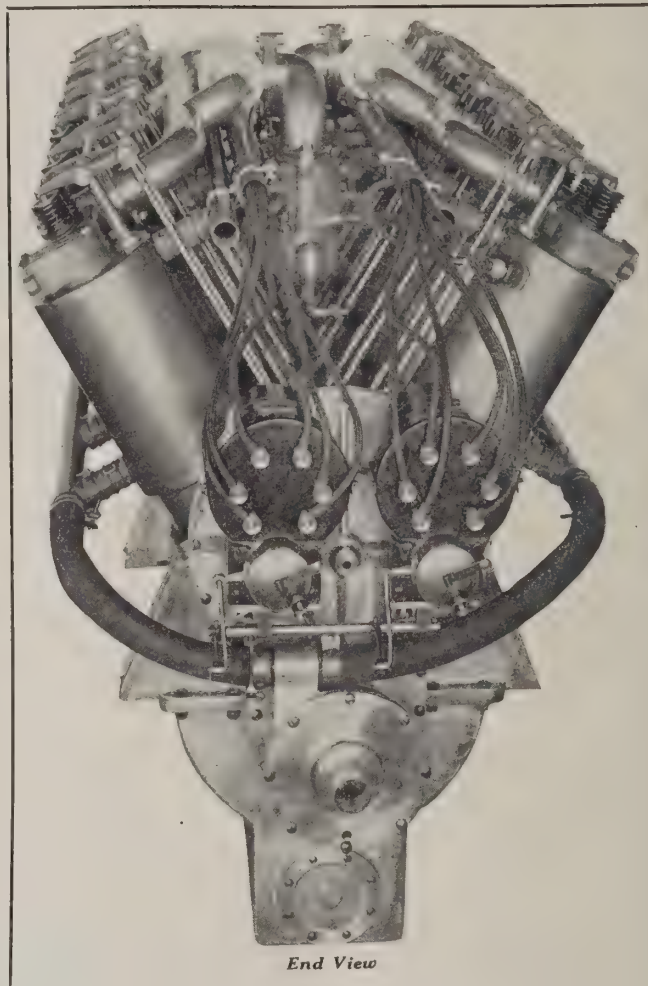
As just mentioned, the cylinders are staggered, which makes it possible to place the connecting rods of opposite cylinders side by side on the same crank pin. These rods are of H-section, and made of nickel steel.

Pistons are of the same material as the cylinders, and weigh but three pounds.

The crank shaft is of chrome-vanadium steel, and supported by seven main bearings of Parsons' White Brass and one in addition in the crank-case extension. In this extension is a two direction S.K.F. ball thrust bearing which is enclosed and runs in oil. No adjustment is necessary when changing from a tractor to a pusher propeller since the bearing takes thrust in either direction.

Oil is forced to each main bearing by a plunger pump and overflows into the sump after passing through the splash troughs. Cylinders and connecting rods are lubricated by the oil splashed from these troughs. A pressure gauge in the cockpit is connected with the oil pump so that the aviator may see how the system is working. The sump holds four gallons of oil.

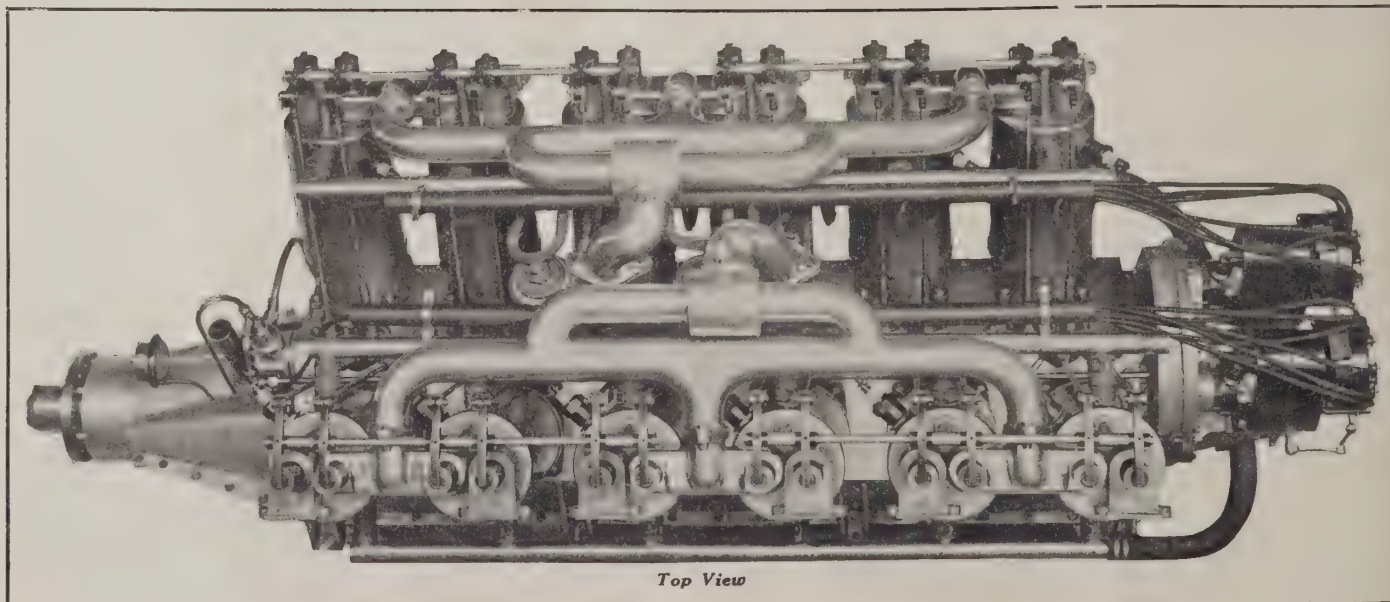
Ignition is by two six-cylinder Bosch magnetos. Two Schebler carburetors are used, one for each set of cylinders. The engine



End View

complete, as shown weighs 590 pounds, which is about 3.9 pounds per horsepower.

The whole engine is beautifully finished with unpolished nickel plated jackets to match the aluminum crank case, and all exposed steel parts such as nuts, push rods and rockers tempered and blued. Not a sign of oil or water leaks out even after many hours' run.



Top View



## Overhead Valves

By A. Ludlow Clayden

*Abstract from "The Automobile," April 5, 1915. It is interesting to know what engineers in the automobile industry think of this construction for racing engines, where the service is nearly if not quite as severe as in the aeroplane engine Ed.]*

**P**ROBABLY the chief trouble that faces the designer of an overhead valve motor is to devise a method for operating the valves that will meet all requirements. There are three main systems in use, that in which the camshaft is in the ordinary location and long push rods lead up to rockers on the top of the cylinder block, that in which there is one overhead camshaft operating the valves by rockers and that in which there are two overhead camshafts operating the valves directly, or through very short, straight push rods. Compare any of these with the pocket style of valve layout, and it is obvious that there are more parts and consequently more expense is involved. Leaving cost to one side for a moment, we may consider the points in favor of and against each of the three systems enumerated, the last first, since it is the newest and has been claimed to be the best of all from the efficiency standpoint.

When the Peugeot company began to build racing cars seriously and to make a very big bid for the position they have succeeded in attaining, their engineers looked to the overhead valve to give them the maximum power for the displacement volume of the motor.

First they discarded the idea of using the usual location for the camshaft and long push rods because of the considerable weight of metal which this construction necessitates in the linkage between the cams and the valves themselves. The scheme that appealed to the Peugeot engineers was a single overhead camshaft with either a worm gear or a bevel drive through a vertical shaft. Accordingly, this was tried out, but severe trouble set in with the gears used for driving the shaft, both worms and bevels being unable to stand up to the stress imposed upon them. For this reason a train of driving gears of the spur type was adopted, arranged one above the other all up the front of the motor.

The next Peugeot development was the abandonment of the rocker construction with the single overhead camshaft, because trouble was experienced with the rockers themselves and with their bearings, while when it was decided to use four valves per cylinder, there was not too much room for the rockers and their fulcrum shaft. Using two camshafts to operate the sixteen valves enabled the push rods between cam and valve stem to be made very small and light so that the reciprocating mass for each valve was a minimum, and this assists accurate valve working at very high engine speeds.

At the conclusion of the 1913 racing season in Europe, when Peugeot and Delage with very similar motors had swept the board, it was commonly thought among French and British engineers that the Peugeot construction was really an advance on any other. So great had been the Peugeot success that their competitors were ready to accept the explanation for the peculiar construction given above. But there were some who held to the courage of their own convictions and among these were the designers of the Mercedes. It would be difficult to imagine two engines more different than the Peugeot and the Mercedes used in the Grand Prix race in France last July; the former followed the previous year's design almost exactly, but the latter was an adapted aeronautical motor. Instead of cast iron cylinders in a block, it had pairs of cylinders all steel, made up from a combination of forgings and pressings welded together. It had four valves certainly, but they were not operated by two camshafts. On the contrary there was a rocker shaft, a fairly small bevel driven vertical shaft, and all the features of design which the Peugeot men had discarded. Neither Peugeot nor Mercedes had any valve trouble but the latter were slightly the faster car and their engines turned over more rapidly. Allowing for differences in tire size, the relative engine speeds at 100 miles per hour were 3,123 for the Mercedes and 2,620 for the Peugeot. These speeds do not, of course, represent the maximum revolutions attained on the lower gears when hill climbing, while both cars did much more than 100 miles an hour on the straights. The fact that the average engine speed of the Mercedes was higher than that of the Peugeot shows that it is possible to use rockers and a bevel driven overhead camshaft, but just why this succeeded on the German car and not on the French is difficult to guess. It seems likely that the Germans had discovered the best material for the bevels they used and that the Frenchmen had not done so.

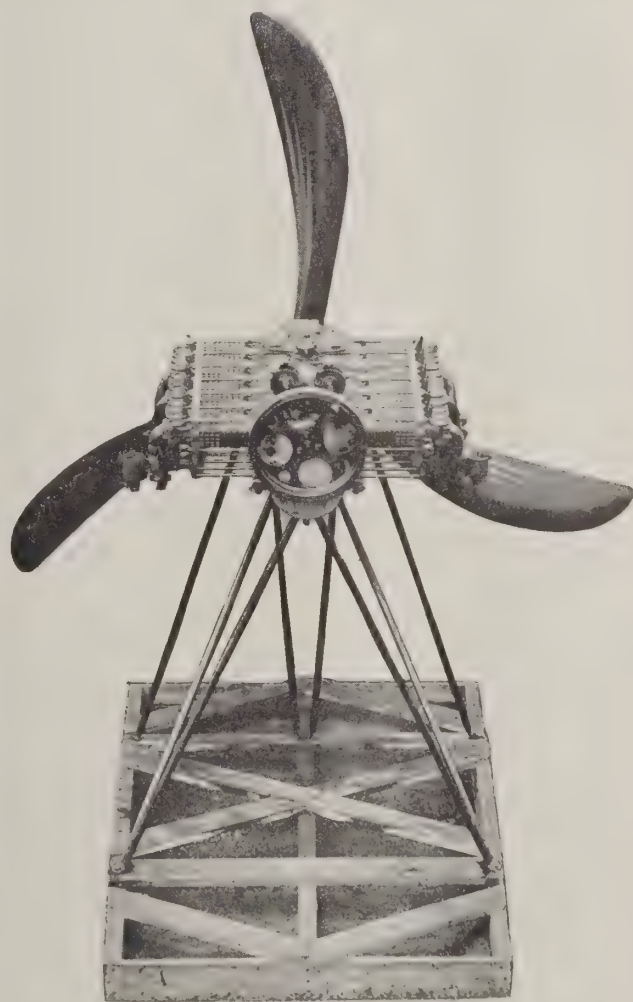
If we except the Fiat design, the most popular form of overhead valve operation is certainly the long push rod with the camshaft situated in the crankcase as usual. This has been used very widely in Europe by all nationalities and many thousands of cars with this style of motor are produced each year in this country. Probably the output of the two leading American makers alone is almost equal to that of the rest of the world; if some of the very small motors are excluded it certainly is.

It must be remembered that the immense power of racing engines is obtained from high speed of revolution. In the Grand Prix in France last year the drivers changed to a lower gear if the motor speed fell below 2,000, and did not change up till it was between 3,000 and 4,000 on a lower gear. At such speeds the free gas way given by the overhead valves is important.

Again, as was pointed out in describing the Peugeot experiments, the push rod system is not the best to use when one wants very high motor power—at least in the opinion of many engineers who have tried it—so if we want the full benefit from the overhead valve we must go straight to the overhead camshaft, and it needs no elaboration of argument to show how expensive that is.

Another difficulty with overhead constructions is to arrange matters so that the rockers obtain efficient lubrication while protecting the valve stems and cages. It is important that there should be no leakage of oil into the valves themselves, as such will cause heavy carbon deposit in a place where it is especially troublesome. It is also equally important to properly lubricate the rockers, because otherwise noise troubles will be aggravated greatly. This is a difficulty that can be overcome, and it is only mentioned as showing that yet one more thing has to be thought of when laying out an overhead mechanism.

It is difficult to construct an eight-cylinder engine so that the valve push rod adjustment is really easy to get at, and with the smaller cylinders of the eight it is particularly important that the push rods are kept in proper condition; too much clearance may easily have a serious effect upon the power. Between the cylinder blocks seems to be the ideal place for the carbureter, the ignition and even perhaps the generator and starting motor, so there is something to be gained on their account if the valves can be got away to another situation. It looks as though there were splendid opportunities now to devise new schemes, because of the entirely new engines which are being constructed. It would be out of place to go into detail here, but the writer wishes to call attention to the fact that the automobile engineer whose designing ingenuity has for years past been held in check is now offered a chance to exercise his faculties freely.



Timing-gear end of the twelve cylinder, 105 H.P. Air Cooled Ashmussen engine. Bore and stroke are 3.75" and 4.5" respectively. The engine weighs 345 lbs., which is equivalent to 3.3 lbs. per H.P.



# The National Aeroplane Competition to Start on Independence

FIFTEEN prominent aviators and constructors have already made application to the Contest Committee of the Aero Club of America for entry in the National Aeroplane Competition. The enthusiasm created by the announcement of the National Flying Competition is expressed in the following communications received from Glenn L. Martin, the prominent California aviator and constructor, and the Jannus Brothers, the Baltimore aviators and constructors.

Mr. Martin's message reads as follows:

"Have read telegraphic reports of National Aeroplane Competition. Congratulate you heartily. Test will show to the world the wonderful advance in American aeroplanes. We respectfully ask that Los Angeles be made California's official starting point. Assure you that Los Angeles will rise to the occasion. Please send particulars immediately. We will enter two aeroplanes.

Glenn L. Martin."

The communication of Antony Jannus, of Baltimore, is as follows:

"The National Ninety Days' Aeroplane Competition is a splendid conception and as an interested prospective participant I want to compliment you for it. This method is an excellent one to solve the present national aeronautical problems.

"Consider my brother Roger Jannus and myself entered for the competition and furnish us with the details and necessary entry blanks at the earliest possible date.

"We know that cities throughout the land will rise to that occasion and Baltimore has been particularly enthusiastic in regard to the science as presented by our aviators. We shall consider it an honor to fly the Maryland colors in so important a series of events.

"Antony Jannus, for Jannus Brothers."

Mr. Raymond V. Morris, one of the Curtiss Company's chief pilots, who is in charge of the Curtiss Aviation School at San Diego, California, on receipt of the announcement of the Competition, wired as follows:

"Letter of the Fifth advising of the proposed National Aeroplane Competition received. Congratulations. Will enter my Mono-Flying Boat and will also pilot a land machine. The Competition will do both the industry and country a great good. You may count on my hearty co-operation.

"(Signed) Raymond V. Morris."

The pilots and constructors who have applied for entry in the National Flying Competition are as follows:

1. Lawrence B. Sperry, who expects to participate with a land aeroplane as well as a flying boat. Both machines are biplanes of the Curtiss type, with 90 h. p. Curtiss motors and each will be equipped with a Sperry gyroscopic stabilizer which won the \$10,000 prize in the French competition for safety devices last year.

2. John D. Cooper, who expects to enter a machine especially designed for long distance flying, which is now in process of construction at the plant of the Cooper Aircraft Company, of Bridgeport, Connecticut. This machine will be equipped with a high power motor.

3. Harold Kantner, chief pilot of the Huntington Aircraft Company, of New York City, who will fly a Huntington Military Type Tractor equipped with a 110 h. p. Gyro motor.

4. Albert S. Heinrich, of the Heinrich Aeroplane Company, 331 Madison Avenue, New York City, who will fly a three-passenger Military Type Heinrich Tractor biplane equipped with 110 h. p. Gyro motor.

5. The Gallaudet Company, of Norwich, Connecticut, who enter either or both of the Gallaudet Military Type and long distance Gallaudet Tractor biplanes, equipped with Gyro motors of 90 and 110 h. p. respectively.

6 and 7. The Glenn L. Martin Company, of Los Angeles, California, will enter a Martin biplane and a Martin Tractor hydroaeroplane, equipped with Curtiss motor of 90 h. p. and Hall-Scott motor of 150 h. p. respectively.

8 and 9. Antony and Roger Jannus, of Baltimore, Maryland, will enter with both land aeroplanes and flying boats equipped with Maximotors of 120 and 150 h. p. They also expect to have an aero yacht equipped with the new 140 h. p. Sturtevant motor.

10. Walter L. Brock, who won the London Derby, the London-Paris-London and London-Manchester-London races last year. Captain Thomas S. Baldwin, who presented Brock's application for entry, said the flying equipment had not yet been decided upon.

11. Charles F. Niles, the veteran pilot, who has just returned from Mexico, where he was pilot for Carranza. He has not yet decided on his flying equipment.

12. William S. Luckey, the veteran Curtiss pilot, winner of



Glenn L. Martin



Albert S. Heinrich



John D. Cooper

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Day (July 4th) and End on Columbus Day (October 12th), 1915



Lawrence B. Sperry



Antony Jannus



Harold Kantner

the New York Aerial Derby of 1913, who will pilot Curtiss land aeroplanes equipped with Curtiss motors.

13. The Grinnell Aeroplane Company, Grinnell, Iowa, W. C. Robinson, pilot, who will fly the Robinson monoplane equipped with the Robinson motor with which he made the American cross-country record of 332 miles last year.

14. Maximilian Schmitt, of Paterson, New Jersey, whose machine won the Fourth of July race last year, and will enter a specially constructed tractor biplane.

15. Raymund V. Morris, one of Curtiss's chief pilots, who is in charge of the Curtiss Aviation School at San Diego, California. Mr. Morris has wired that he will enter his fast mono-flying boat as well as a land machine.

The Curtiss Aeroplane Company, of Buffalo, New York, the Burgess Company, of Marblehead, Massachusetts, and the Thomas Aeroplane Company, of Ithaca, New York, are also very much interested but on account of pressing orders for military aeroplanes could not state how many entries they would have. They are anxious to enter a number of machines and will do so if they can spare the pilots.

Special satisfaction was expressed by the officers of the Club over the fact that all the entrants propose to enter with American-made aeroplanes and motors. This shows, it is pointed out, the tremendous progress made since Congress showed intention to increase appropriations for Army and Navy Aeronautics. By extending the competition to Columbus Day all the important holidays are included in the National Aeroplane Competition. As many cities have in the past few years been holding aeroplane exhibitions on Independence Day, Labor Day and Columbus Day, the Contest Committee expects that the prizes offered heretofore by cities and boards of trade to individual aviators for exhibitions will be offered in connection with the National Flying Competition—which is held for the purpose of assisting the Army and Navy in developing Aviation Corps for the National Guard and Naval Militia, to demonstrate for the Post Office Department the practicability of carrying mail by aeroplane to the hundreds of isolated places where it now takes days to deliver mail which could be delivered by aeroplane in a few hours, to develop the sport, and demonstrate the value of aeroplanes for practical purposes.

CONTRIBUTIONS FROM MEMBERS OF AERO CLUB OF AMERICA TO NATIONAL AEROPLANE COMPETITION

Edwin Gould	- - - - -	\$500.00
Alan R. Hawley	- - - - -	250.00
Mortimer L. Schiff	- - - - -	250.00
J. C. McCoy	- - - - -	250.00
Cortlandt F. Bishop	- - - - -	250.00
Editors and Publishers of FLYING	- - - - -	250.00
Editors and Publishers of AERIAL AGE	- - - - -	250.00
Samuel H. Valentine	- - - - -	100.00
S. R. Guggenheim	- - - - -	100.00
Robert Glendinning	- - - - -	100.00
Frank A. Seiberling	- - - - -	100.00
George W. Turney	- - - - -	100.00
Lawrence Sperry	- - - - -	100.00
Howard Huntington	- - - - -	25.00
Walter H. Phipps	- - - - -	25.00
F. A. R.	- - - - -	25.00
Isaac M. Ulman	- - - - -	25.00
James Byrne	- - - - -	25.00
John Dale Cooper	- - - - -	25.00
Edgar M. Berliner	- - - - -	25.00
Thomas S. Baldwin	- - - - -	25.00
F. H. Russell	- - - - -	25.00
Albert S. Heinrich	- - - - -	25.00
K. M. Turner	- - - - -	25.00
Bernard A. Law	- - - - -	25.00
Charles F. Niles	- - - - -	25.00
William H. Bliss	- - - - -	25.00
Maximilian Schmitt	- - - - -	25.00
John C. Breckenridge	- - - - -	25.00
Harold H. Brown	- - - - -	10.00
Lieut. J. E. Carberry, U. S. A.	- - - - -	10.00
A. Leo Stevens	- - - - -	10.00
Lieut. F. Dortch, U. S. N.	- - - - -	10.00
Lieut. F. P. Lahm, U. S. A.	- - - - -	10.00
Howard A. Scholle	- - - - -	10.00

List of Prizes to be offered in connection with National Aeroplane Competition on page 139



# The New Thomas 100 H. P. Military Tractor

By Walter H. Phipps

**T**HE splendid performance of the new Thomas Military Tractor, which in its first trials demonstrated its ability to pass the most rigid tests, is another example of the ever increasing efficiency of American machines as compared with the best European makes.

As may be seen from the accompanying photograph and drawings the new tractor is of exceptionally clean cut design and low head resistance, two factors which aid greatly in its performance.

It has been designed especially for military purposes to supply the demand for a well built, speedy and safe, two-passenger machine, having a large speed range, and capable of flying with ample reserve when carrying two people, gasoline, oil, etc., for a flight of from four to six hours, with an additional useful load of 450 lbs.

**OVER-ALL DIMENSIONS.** Length over-all, 26 ft. Span, 36 ft. Chord, 5 ft. Gap, 5 ft.

**WINGS.** The wings are built up in five sections. The four large sections comprise, practically, the entire lifting surface of the machine. The small section fits over the fuselage.

The wing curve is designed from data obtained from M. Eiffel's experiments in his Anteuil Paris laboratory, and is especially selected so as to have, not only an extremely high lift to drift ratio, (1 in 20), but is also especially adapted to fast climbing with load (4000 ft. in 10 minutes, 800 ft. in first minute) and of sustaining the machine in flight, fully loaded, at a comparatively low speed. (High speed fully loaded, 82 miles per hour. Low speed fully loaded, 38 miles per hour).

All the wood used in the wing construction is clear silver spruce; and all the beams, ribs, etc., are of the lightest sections possible consistent with the strength required in each member.

All ribs are built up in such a way as to assure their perfect alignment, and are proof against warping, and also weakening, due to exposure and weather conditions.

**THE FUSELAGE.** Is made up largely of white ash. All longitudinal members are I section, and tapered for lightness. All clips are of steel, and are so designed that they do not pierce the longitudinal members.

**THE RUNNING GEAR.** Is of the two-skid, two-wheel type, having two 26 in. x 4 in. wheels and especially made Good-year tires, mounted on a transverse axle, which axle is in turn carried on the skids through the medium of rubber shock absorbers; this, combined with the large wheels and tires, supplies the long felt want for a running gear which will ease off the violent shocks of landings on rough ground to the minimum, and enables the aviator to negotiate get-aways and landings from rough or even ploughed ground, in cases of necessity.

All running gear members are of streamline section, also the axle is streamlined by a channeled member joining the skids.

**THE POWER PLANT.** Is completely enclosed, and is mounted in front of the fuselage, having the radiator immediately in front of the engine, and a light weight aluminum folding hood effectively shielding the former, and preserving the streamline from the fuselage.

A service gasoline tank is mounted in front of the passenger's seat, and a storage tank, holding 20 gallons, is fitted under the pilot's seat, and, through a pressure pump, supplies the service tank.

**CONTROLS.** *Elevator*, operated by pull and push on steering wheel, which is mounted on a substantial, pivoted post. The movement is conveyed to two sturdy, all-steel flaps, hinged to the stabilizer.

*Rudder*, operated by a rotation of the wheel. The stress members are all of steel construction, and the rudder is balanced for ease of operation.

*Ailerons*, are four in number, and are hinged to the outer extremities of the rear wing spars. They are operated by a leaning, shoulder bow, or, as an alternative, by foot pedals, mounted in the front of the pilot's compartment.

All the controls are very strongly constructed, the stressed members being of steel construction, with all joints wrapped and brazed; they are of ample size to take care of their requirements.

**THE FABRIC.** The fabric used is a high grade imported Irish linen, having a high strength per square inch in both weft and weave; it is sewn onto the machines, and is then treated with from five to nine coats of special "dope" solution, which not only tightens it on the framework, but also increases its strength, and gives it a high finish and extreme durability.

**WIRES.** Are of ample strength and are of Roebling manufacture, the most important ones being stranded steel cable, and doubled for safety. In the fuselage and in some of the minor bracing, Roebling nickel-plated wire is used. Each wire joint is designed so as to have slightly greater strength than the wire itself.

**WEIGHT.** Weight of machine, empty, 1075 lbs., approximately.

**DASHBOARD.** In front of the pilot's seat is fitted a substantial mahogany dashboard, having the following standard equipment of instruments, let in flush: gasoline pressure gauge; revolution counter (Tel Manufacture) showing engine speed; inclinometer, showing angle of flight; clock; barograph, showing height; Pitot tube, giving air speed; switch; gasoline shut-off; magneto advance.

**SEATING.** The seats are of aluminum bucket type, and are fitted with a 3-inch curled hair cushion, upholstered in a serviceable gray corduroy. The position is comfortable, an item not to be neglected, on a four or five hours' flight.

**ENGINE.** The Curtiss 100 h. p. OX or other good make of motor of like h. p. is used as standard equipment.

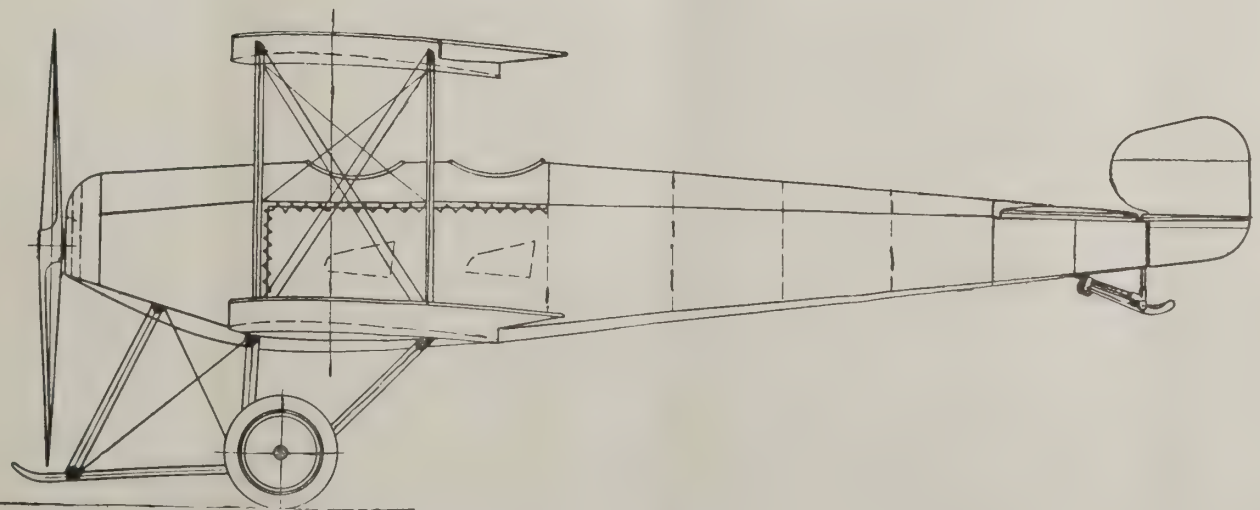
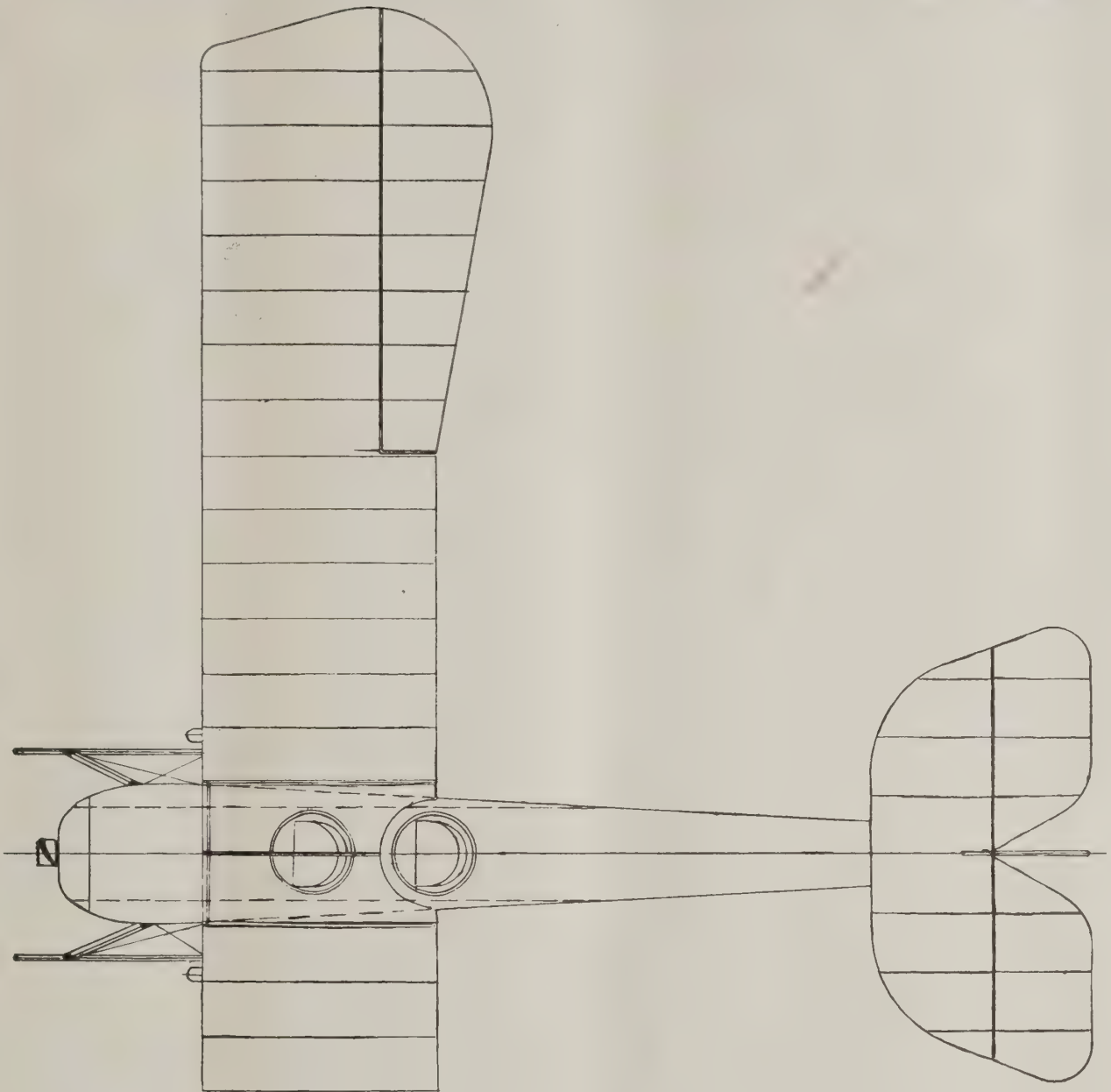
**PROPELLER.** A Thomas propeller is used. It is made of mahogany and, as in the balance of the machine, the factor of safety is 7.

Recent tests of a model of this design of propeller, in M. Eiffel's laboratory, have shown an efficiency of 79 per cent., which is, without question, one of the highest efficiencies so far obtained in an air propeller.



Rear View of the Thomas Military Tractor

Top and Side View Drawings of the 100 H. P. Thomas Military Tractor Biplane





# Foreign News

Reported by L. d'Orcy and Robert Pluym

## Belgium

According to the London *Daily News* another Zeppelin has been wrecked in Belgium. While flying over the district of Ypres the airship was heavily shot at and badly damaged.

It managed to fly as far as Thielt, but in the early hours on April 13 it came down a complete wreck amid the trees near Maria Aelstre.

## Egypt

In Egypt, British airmen have been dropping bombs on the Turkish encampment near the border, while a French cruiser, the fire of which was directed by a seaplane, has been throwing shells on the Turks near El Arish, where the army for the invasion of Egypt has its headquarters.

## France

On April 14, the French War Office reported the following:

"A Zeppelin airship threw bombs down on Bailleul (a town in France, in the department of Nord, near the Belgian frontier). Its objective was our aviation ground, but this was not hit. Three civilians were killed.

"Two German aeroplanes were forced to come to the ground within our lines, one near Braine, and the other near Luneville. In both cases the aviators were taken prisoners. A third German flying machine, winged by the fire of our advance posts, fell near Ornes, to the north of Verdun, 600 yards from our lines. One of the aviators was hit by a bullet."

The preceding night report said that French airmen had successfully bombed military hangars at Vigneulles in the Woevre and dispersed, not far from Vigneulles, a battalion on the march.

A combined attack by one British and five French aeroplanes was made on April 17 upon a number of German towns on the right bank of the Rhine, and some forty bombs were thrown.

When the first biplane appeared over Tullingen heights, it was distinctly recognized as a British machine. It was followed by five others, which were French and which went further up the Rhine, dropping bombs as they went along.

The British machine came down very low over Haltingen railway station, dropping five bombs with remarkable precision on empty cars, three of which were destroyed.

The bombs smashed the gas conduits, and a gas tank took fire, and soon the fire spread to the station buildings. The flames could be seen from Swiss territory. The biplane continued its flight, dropping three bombs further down at the junction of the line for Basle and Freiburg.

The Germans opened fire on the daring Britisher, and one shell struck him and disabled his machine between Heggenheim and Burgfelden, where it came down. The two occupants were wounded and taken to the hospital at St. Ludwig; but they had had the satisfaction of having carried out one of the most daring and successful raids on this side of the Rhine since the beginning of the war.

Inquiries made at the Paris railway stations show that the number of departures from the capital has not increased since the Zeppelin raid.

The deputies representing Paris visited Premier Viviani and asked what means of defence against Zeppelins exist, how the authorities expect to use them, what anti-aircraft guns, projectiles and gunners are in readiness and in what way it is planned to use aeroplanes.

Maurice Barres, who was one of the deputies who called on the Premier, said after the interview that he was not at liberty to give out Premier Viviani's replies for publication, but that they were of a nature which should satisfy the populace. The scheme of warnings to announce the approach of hostile aircraft, he said, had proved most satisfactory. Other points in the scheme of defence recognized as defective have been improved.

A Women's Ambulance Brigade is being recruited in France among the women motorists, balloonists and aviators, the aim being to find enough capable women conductors to replace all the men driving ambulances.

Four well-known aviatrices, Baronne de Laroche, Mlles. Hélène Dutrieu, Jane Herveux and Mme. Pallier, who had been refused admission to the Aviation Corps have joined this movement.

## Great Britain

A Zeppelin raid was made over the Tyne side district on April 14 soon after 8 o'clock in the evening.

The whole region from New Castle to coast was plunged into darkness at the news of the attack, which came from Blyth, eleven miles northeast of New Castle.

The Zeppelin was heading in from the east at great speed, and as it passed over Blyth dropped eight bombs on the outskirts of the town. After leaving Blyth, the giant aircraft changed its course, evidently intending to make for New Castle, but its pilots were obviously baffled by the darkness. Bombs were launched from it from time to time haphazardly, but very little damage was done. Eventually the airship reached Tyne at Walls End, and then proceeded eastward toward South Shields. As it drew near Walls End more bombs were dropped. One of them fell on a railway, narrowly missing a crowded passenger train.

Altogether the raid is estimated to have lasted twenty-five minutes, and so far as can be ascertained no great amount of damage was done. One man was injured by a shell splinter at Choppington. Most of the bombs discharged were of the incendiary kind. The steel cases or cylinders were five or six inches in diameter and about eighteen inches long. They had been coated with some inflammable material, which had been burned off and the steel tubes were fused by the intense heat.

From Walls End the raider crossed the Tyne, and five or six minutes later was reported at Weston and then at South Shields, passing eastward and homeward. New Castle was altogether missed.

Another Zeppelin raid upon England took place on April 16. About midnight two airships approached within approximately eleven miles of Mansion House, in the centre of London, when they passed over Dagenheim. This is the nearest to the city that German aircraft have approached. No bombs were dropped at Dagenheim, but some were hurled on towns in the neighborhood of the estuary of the Blackwater, in the Essex marshes, thirty miles from London, and directly opposite the British naval base at Chatham.

The property damage done has been confined to fires which were quickly extinguished and a considerable number of broken windows. After accomplishing this the Zeppelins have succeeded in returning safely to their base in Germany, according to despatches from Holland. The chief effect of the raids have been to remove much of the apprehension that Germany could strike heavily at England with her aerial armada.

The damage done was even less than that accomplished by the lone dirigible which had preceded these by about twenty-four hours. The most harm was done at Lowestoft, where three incendiary bombs were dropped, setting fire to a lumber yard, killing three horses and breaking some windows.

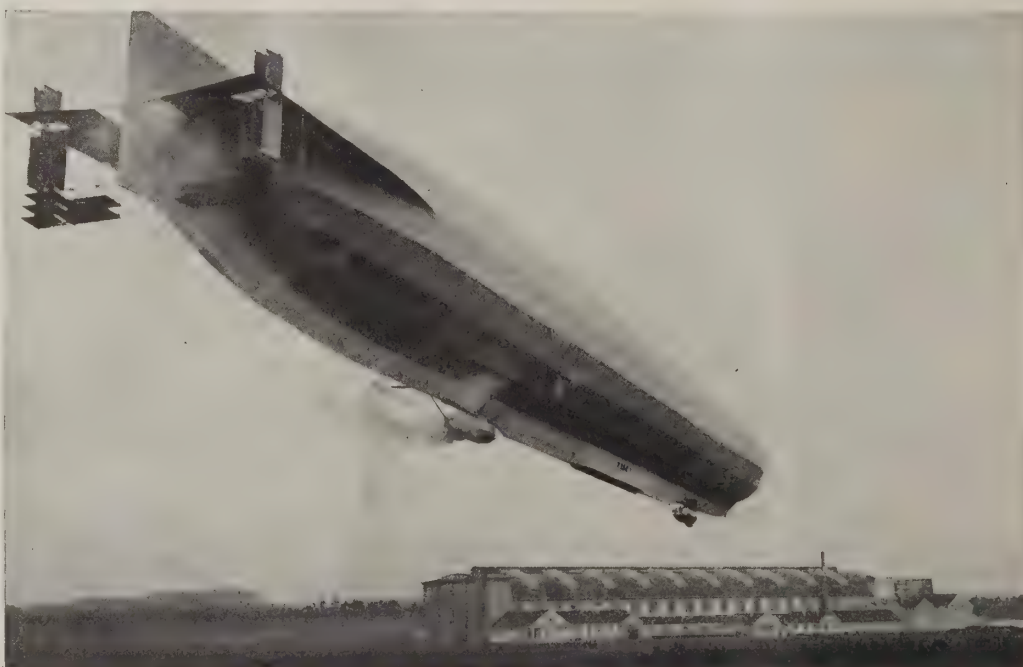
The Zeppelins used in these two latest raids appear to be those of the latest type, which were reported in construction especially to attack England. British trawlers which sighted the Zeppelins which made the first of these two raids on its way home, say she was the L-9. One of those which was in the raid of to-day was sighted by the Norwegian steamship Dag, the master of which reported she was one of the latest type.

The distance to London from the Zeppelin hangars, just west of the gas works at Cuxhaven, is 315 miles. From the hangars at Hamburg it is 450 miles, and from those at Cologne 300 miles.

During the British aeroplane attack on Cuxhaven Jan. 24 it was discovered that Heligoland, 320 miles from London, also had hangars. Zeppelins issued from them and attacked the British cruisers which had just sunk the Blucher.

There are hangars at Wilhelmshaven, Kiel, Aix-la-Chapelle, Dusseldorf, Binkendorf, and Treves, near the Rhine. The last four places are within a radius of 350 miles of London.

The German naval airship L-3, which foundered on the coast of Denmark on Feb. 17. The naval Zeppelins (also called L-type) have a displacement of 27,000 cu. m., a length of 158 m. and a diameter of 16.6 m. The power-plant consists of four 200 h. p. Maybach motors driving four propellers, that give a top speed of 53 miles per hour. The useful load amounts to about 7000 kilos and the radius of action is estimated to be about 800 miles when only a limited supply of explosives is carried (about 1000 kilos). Five ships of this type seem to be in commission at the moment of writing, called L-5, L-6, L-7, L-9 and L-10, the two latter completed on March 12 and April 3. The airships L-3, L-4 and L-8 have been destroyed during the war.





# MODEL NEWS

BY WALTER H. PHIPPS

## CLUBS

**THE AERO SCIENCE CLUB OF AMERICA**  
29 West 39th Street, New York City

**PHILADELPHIA MODEL AERO CLUB**  
2208 Brown Street, Philadelphia, Pa.

**PACIFIC NORTHWEST MODEL AERO CLUB**  
915 Ravenna Boulevard, Seattle, Wash.

**LONG ISLAND MODEL AERO CLUB**  
401 Grant Ave., Cypress Hills, L. I.

**BAY RIDGE MODEL CLUB**  
6730 Ridge Boulevard, Bay Ridge, Brooklyn

**CONCORD MODEL AERO CLUB**  
Concord, Mass.

**SUMMIT MODEL AERO CLUB**  
26 Shady Side Ave., Summit, N. J.

**THE ILLINOIS MODEL AERO CLUB**  
Room 130, Auditorium Hotel, Chicago, Ill.

**MILWAUKEE MODEL AERO CLUB**  
402 Bradford Ave., Milwaukee, Wisc.

**CONCORD MODEL CLUB**  
c/o Edward P. Warner, Concord, Mass.

**AERO CLUB OF ST. LOUIS**  
Columbia Bldg., 8th & Locust Sts., St. Louis, Mo.

**MODEL AERO CLUB OF OXFORD**  
Oxford, Pa.

### Aero Science Club Bulletin

Report by George A. Cavanagh, Secretary

ON April 18th the Aero Science Club of America held its Speed Contest at the Van Cortlandt Park Flying Field. As many as fifteen flyers were entered and a large gathering of people witnessed the flights. Although the aspirants worked fervently to make their models cross the line, none succeeded in so doing. This was accounted for by the topographical condition of that portion of the field in which the contest took place and the high wind which blew from the northeast forcing the models down. Some of the models managed to fly within a few feet of the line after making several circles.

Mr. John McMahon attracted much attention with his very fast model which was propelled by four propellers. It was estimated that the machine travelled at a speed of between 45 and 50 miles per hour. Owing to the machine catching in a rough spot two propellers were smashed thus preventing him from further participating. Mr. Criscoulli of the Long Island Branch exhibited a very fast and fine model but was likewise hampered by the conditions. Mr. Lester Ness also of the Long Island Branch was on hand with his model tractor monoplane which flew exceptionally well under the circumstances. Mr. Bamberger of the Bay Ridge Model Club in all probability flew more times than any of the other flyers but nevertheless was confronted with the same trouble, and at best came within a few feet of the line. It was indeed discouraging considering the anticipation on part of the contestants in preparing for and then trying their best during the contest under such circumstances. But model flyers expect to be confronted with such circumstances occasionally and therefore, all left for home considering the time well spent.

In addition to the contestants there were a number of members present.

At the meeting of April 17th the Club had the pleasure of having present Mr. Blomquist of Park Ridge, N. J., the inventor of

the synchronous oscillator. Mr. Blomquist gave a very interesting lecture on his oscillator. With the use of the black-board Mr. Blomquist went into detail concerning the construction, operation and various other features of the oscillator. Once before Mr. Blomquist gave a demonstration before the club with the use of a few models all of which worked well.

It is apparent from recent developments in model flying that a number of members of the A.S.C., are now turning their attention aside from the present day models to those built along more scientific lines. A few are devoting their time to the development of model motors and others to structural development and in all probability before the summer has passed the model aeroplane world will have witnessed a different class of models.

The Aero Science Club was very much grieved on hearing of the death of Mr. Cecil M. Peoli who was killed while flying a machine of his own design at College Park, Md. Mr. Cecil M. Peoli was at one time a member of the New York Model Aeroplane Club, a number of members of which are now members of the A.S.C., and while a member of that Club established a number of records. Mr. Peoli was well liked by his fellow members and his death was much regretted.

The Aero Science Club extends its best wishes to Mr. Arthur E. Nealy who has recently been appointed assistant secretary of the Aero Club of Illinois.

For particulars concerning the Aero Science Club, address the secretary, George A. Cavanagh, 49 Lott Ave., Woodhaven, Long Island, New York.

### Illinois Model Club

Saturday, April the tenth, the I. M. A. C. held the second of its series of distance meets. Mr. Ellis Cook took first place with a flight of 1375 ft. Mr. Willis Hitt was second with 1000, and Charles Arens third with 980.

The day was excellent and the wind moderate. It could be

(Continued on Page 139)



Novel Glider constructed by the boys of the Philadelphia Aero Club





Aeronitis is a pleasant, a decidedly infectious ailment, which makes its victims "flighty," mentally and physically. At times it has a pathologic, at times merely a psychologic foundation. It already has effected thousands; it will get the rest of the world in time. Its symptoms vary in each case and each victim has a different story to tell. When you finish this column **you** may be infected, and may have a story all of your own. If so, your contribution will be welcomed by your fellow **aeronuts**. Initials of contributor will be printed when requested.

#### In Case of Air Raids

The following advertisement appears in an English provincial newspaper:

##### Zeppelin or Aeroplane Raid

In the event of an

##### AIR RAID

We shall be pleased to permit a limited number of citizens into our

##### CAPACIOUS CELLARS

Where they will be interested in a very

##### LARGE STOCK

OF

##### FINE

##### WINES AND

##### SPIRITS, etc.

The town wit was inspecting the Flying boat. All the natives were listening eagerly to pearls of local humor which fell from his lips. "I don't care how high I go so long as I have one foot on the ground," he exclaimed with a smoothness of expression which only comes from frequent iteration.

The new mechanic, who had heard the old saw only a few times, called to him sympathetically: "Don't worry, old top, aviators never take up light-headed people and your head will never swell up enough to lift them feet of yours off the ground."



WHY NOT?

"Centre-Sky"—A New Position. N. Y. World

#### Beechisms

If there is a man, woman or child in the world who has not asked us the question: "When are you going to fly?" let him do so quickly as our hearing is getting worse.

In flying an aeroplane there is a reasonable hazard which compares favorably with other pursuits. In flying an aeroplane from any old ground in any old weather to fulfill the extravagant promises of an enthusiastic manager the hazard is increased to the sporting point. But in flying an aeroplane from any ground in any weather, at night with fireworks burning, the hazard is raised to the nth degree. Be careful, Art.

Aviation will become popular when an achievement gets as much publicity as an accident.

A few years ago a young aviator whose ambition exceeded his skill left the doctor's hands after an accident with a plaster running across his forehead and down his nose. A few days afterward, C. K. Hamilton had a smash which dazed him. The aviator with the plaster rushed up and with affected familiarity exclaimed: "Oh, Charlie, are you hurt?"

"If I am," grinned Charles K., "I don't carry the 'Sign of the Cross.'"

If your curiosity impells you to climb up on to the wings of our boat may we be permitted to suggest that you wipe your shoes:—the next man who climbs up might soil his hands and blame us.

—A. C. Beach

DID YOU NOTICE how every time the press bureau of one of the warring European countries announces a little bomb-throwing expedition by some of its *own* airmen the result is always heralded as having destroyed places of *military importance*, while every time an *enemy* airman does the same thing he is invariably reported as having only killed and maimed *civilians*? (L. O.)

From the (N. Y.) *Evening Telegram*:

"Those Zeppelin raids on London recall a thoughtful suggestion made some time ago by a Boston paper that there should be on sale some adaptation of a periscope which will enable citizens to see the show without getting a stiff neck looking up.

No anti-aircraft guns are used across the Rio Grande; the dangers that confront "military aviators" over there are of a more thrilling variety. Listen to this one:

"Kenneth Williams, a Villa aviator, was arrested charged with being a Carranza spy and taken out at Torreon by a Villa firing squad to be executed.

"He had about 300 pesos (\$60) of Villa money and bought off the firing squad, climbed under a box car and rode the rods to the border which he crossed safely."

No wonder N—s quit "war aviating" as an esteemed contemporary would say.

In the *N. Y. Sun* a faithful reader relates an "intensely delightful recurrent dream."

"It is of flying. Like all really great things, it is very simple. I merely raise my arms and the force of gravity ceases to act. I rise gently and easily to any desired height, preferably well above the treetops, then go sailing serenely through the circumambient atmosphere.

"Such gorgeous cloud effects! Such wonderful landscapes as unfold themselves to my enraptured gaze!

"Never a thought of fear, of tension. Instead a thoroughly relaxed, beatific appreciation of the beauties of the world." . . .

And no smell of castor oil, just then chirped a cynic airman who overheard the Man behind the Desk reading the paper.



## Tentative Schedule of Prizes to be Offered

In connection with the National Aeroplane Competition

1. A "best record" prize of \$10,100 to be awarded in daily prizes of \$100 each to the aviator who holds the best cross-country flying record at the end of each day, the record to have been made in a flight of not longer than ten hours' duration and the distance to be measured in a straight line. This prize has the special value of inducing aviators to fly daily in order to beat the standing record. It will undoubtedly result in aviators making flights between representative cities each day during the Competition. Ten hours is adjudged to be a normal flying day, and that limit has been imposed to prevent excess.

2. Eight "best record" prizes aggregating \$10,100 to be awarded to the eight aviators who make the best records in the Daily Distance Competition, the prizes to be: \$3,500, \$2,500, \$1,500, \$1,000, \$750, \$500, \$250 and \$100.

3. A \$25,000 prize to be divided between the three aviators who make the best time in flights across the continent, starting from or ending at New York. This may induce the eastern aviators to continue their flights to the Pacific coast and the western aviators to the Atlantic, and possibly may result in a number of trans-continental flights during the Competition.

4. A prize of \$5,000 or \$10,000 for the best demonstration of the practicability of mail carrying, to be judged from the standpoint of regularity of service, protection afforded to mail matter from the elements and the advantage of time saved over other methods of mail distribution. The Post Office Department has prepared a schedule of isolated places in certain states where the delivery of mail between points twenty and ninety miles apart now requires days, but which would require only an hour or two by aeroplane. The principal value of this prize is that it will afford to the Post Office Department the opportunity of determining if the people who want their mail delivered promptly will pay between 25 and 50 cents to have it delivered by aeroplane.

If so, aero mail-carrying will be self-supporting and the Post Office Department can establish a number of lines immediately and thereby solve some difficult problems of mail distribution, as well as to begin the creation of an aviation reserve which will have the advantage of being used daily in peace, while being ever ready for service.

5. Prizes amounting to between \$5,000 and \$10,000 to be divided among the aviators who cover the greatest number of miles during the Competition, flying entirely by chart and compass.

Prizes of between \$1,000 and \$5,000 for:

6. The best land and water aeroplanes participating in the Competition, considered from the standpoint of engineering and general finish in construction of the machine and comfort afforded to the pilot and passengers.

7. The best "schedule record" made, judged by the number of times an aviator reaches previously designated places on time.

8. The best demonstration given by both land and water aeroplanes equipped with automatic stabilizers.

9. The lowest consumption of fuel and oil for miles covered.

10. The largest number of passengers carried a given distance in land or water aeroplanes, the construction of the machines to afford the pilot and passengers the greatest possible amount of convenience and having proper seating capacity for each.

11. The best demonstration given by either a land or water aeroplane equipped with two motors, which can be run independently of each other.

Besides these will be the prizes to be offered by states, cities, institutions, organizations, etc. Twelve hundred cities have been invited to participate.

### Model News—Continued from Page 137

seen that the machines were not doing their best; many of the longest flights were made after the models had wasted power in huge circular flying.

The percentage for the two meets now stands:

Cook, 100; Laird, 100; Nealy, 93.3; Hitt, 72; Arens, 71. (Those lower than 70 not given).

#### The Concord Model Aero Club

By Edward P. Warner

The Concord Model Aero Club held the second of its series of meets on March 27th. The competition was for duration from the hand and produced some interesting flying, although no very remarkable record made owing to the high wind. The competition was won by Francis W. Hatch of Medford.

On Sunday, April 4th, Mr. Hatch and Bean were both trying

out new machines and getting well over 60 secs. duration. Messrs. J. P. Borland, Morison, Blake and Benjamin Smith were also flying well at Concord. The following week-end Arthur Rockwood of Medford made a hand launched distance of 1800 feet, which constitutes a record for the Boston district.

#### Bay Ridge Model Aero Club

The Bay Ridge Model Aero Club reports that its members have developed a compressed air motor which has proved very successful. The construction of the motor was started in September and the engine completed and tested in October.

It is of the four cylinder rotary type and capable of turning a 24-inch propeller 1,800 r. p. m. and has proved quite successful.

The club is now working on a new model motor which it is expected will be ready for trials soon.

# SCHMITT MONOPLANES

SAFETY  
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PERFECTION IN CONSTRUCTION AND DESIGN

Won First Prize and Blackton Trophy at  
Aviation Races Held in New York City, July 4th, 1914

**Spring Classes Being Formed, Write for Details**

For particulars write to

**MAXIMILIAN SCHMITT AEROPLANE AND  
MOTOR WORKS**

96 Dale Avenue

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HEINRICH  
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BIPLANE



EQUIPMENT  
110 H.P.  
GYRO-  
"DUPLEX"

# Gyro-"Duplex" Motor

ADOPTED BY LEADING CONSTRUCTORS

110 H.P. Gyro, 9 cylinders, weight 270 pounds

90 H.P. Gyro, 7 cylinders, weight 215 pounds

## GYRO MOTOR COMPANY

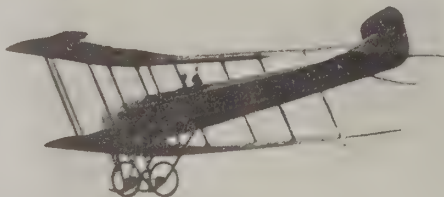
N. Y. Office,  
331 Madison Avenue

774 Girard Street,  
Washington, D. C.

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HYDRO - MONOPLANES  
and FLYING BOATS

*Aeroplanes de Luxe* for Boating, Racing, Cross Country Flying



*A Gallaudet 100 H. P. Military Tractor flying with pilot's hands off the controls, proving remarkable inherent stability*

**THE GALLAUDET CO., Inc.**  
NORWICH, CONN., U. S. A.

RAYMOND PYNCHON & CO., General Agents, 111 Broadway,  
NEW YORK

## For Sale

ALL AERONAUTICAL EQUIPMENT OF  
THE LATE LINCOLN BEACHEY

*Consisting of*

**80 Horse Power Monosoupape Gnome Motor**, with extra parts and tools for same. Weight, 198 pounds. In perfect running order. Set up ready for demonstration.

**Loop-the-loop Biplane** in which motor was used, complete with spare parts and packing cases.

**One Martin Tractor Biplane.** Complete set of parts for assembling Monoplane.

Motor fell in clear water and immediately on being taken out was taken apart, cleaned, oiled, reassembled, placed in the center section of the Biplane, given a twenty-minute run, and runs as perfect as ever. Demonstrations at all times.

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Advertising  
in this department  
10c. a word  
\$2.50 minimum

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Forms close for this de-  
partment on Monday  
preceding date of issue

**Wanted**—Draftsmen with ten years' experience and skilled in the design and layout of aeroplanes.

Address, Aerial Age, Box 3  
116 West 32nd Street, New York City

### Manager Wanted

for aviator planning long distance flight. Must be experienced in securing exhibition dates.

Address, Aerial Age, Box 7  
116 West 32nd Street, New York City

### Wanted

Woodworkers, sheet-metal workers and assemblers with aeroplane experience.

Thomas Bros. Aeroplane Co.  
Ithaca, N. Y.

### Draughtsman

Experienced designer on up-to-date Flying machines, speaking German, French, English, wishes position. Neat accurate worker. Calculations.

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Address Box No. 9, "Flying," 120 West 32d Street, New York City.

### FOR SALE—CURTISS AEROPLANE

Best offer over \$500.00 takes my Curtiss Type Aeroplane, equipped with 50 H. P., 6 cylinder Kirkham Motor. All in good flying condition; crated for exhibition work and includes 4 extra sections and motor parts. Machine was flown by Eugene Godet, season 1913.

Address, G. W. ZEIGEN  
P. O. Box 607 Monroe, La.  
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### Experienced Engineer

open for engagement. Specialty high power, light-weight motors. If desired, can furnish designs for 180 hp. motor to weigh under 425 lbs. or as required. Six years' experience in all branches of motor design, manufacture and testing.

W. M. D., Aerial Age, 116 W. 32 St., N. Y. City

### For Sale

Genuine Curtiss flying boat with Curtiss O X for sale at the right price. Also, Maxi flying boat with 100 hp. Maximotor six.

MAXIMOTOR MAKERS  
1526-46 E. Jefferson Ave. DETROIT

### For Sale

Wright-Biplane, almost new. Has a Wright 35 h.p. motor and is in fine shape. Will take \$2000 for it, including motor. \$500 cash down, remainder in three months. Box 5, AERIAL AGE, 116 W. 32nd Street, New York.

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Manufacturers of

Seaplanes

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Machines of all Types

*Spring Class at our Train-  
ing School will open on or  
about May 15. Enroll now  
to insure a place at the start*

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Real Scientific Models. Guaranteed to fly better than any other models ever put on the market before—All RECORD holding types, designed and tested by model experts.

"WORLD'S RECORD" FLYING BOAT (Official Record Holder)

Plan and instructions with full-sized hull lay-out, 50c. post paid. Plan and instructions alone, 35c.

Other Model Plans.—Phipps' "Avis" Tractor hydro-aeroplane, 25c., with pontoon blue prints, 35c.; "Long Island Racer," 25c.; Excelsior Tractor, 35c.; Bleriot Racer, 25c. Write now for complete 1915-1916 Instruction Book and Catalogue, 7c. post paid.

THE MODEL SUPPLY HOUSE, Walter H. Phipps, Dept. G. 503 5th Ave., New York

### JANNUS BROTHERS

NOW testing their new 120 h. p. Flying Boat. Announcement will be made shortly. A full working force of competent aviators for instruction, exhibition and passenger carrying. Learn to fly at a Jannus School. Tony Jannus and Fritz Ericson in the East; Roger Jannus and J. D. Smith at San Diego.

Send for Booklet. Our teaching method is thorough and the most economical. Address as below

New Factory: Battery Avenue and Hamburg Street, Baltimore, Md.

## Gallaudet Aero Varnish

Fills the cloth thoroughly and shrinks it moderately. It is gasoline, oil and water-proof. Can be worked smooth with sandpaper, and brought to a high gloss after three or four coats, or can be finished with any good spar varnish.

Use at least three coats, applied quickly, with a brush about two inches wide, and allow one hour for drying each coat. Price, \$3.85 per gallon, plus cost of cans or barrels.

THE GALLAUDET CO., Inc., Greenwich, Conn.



## Rome Aeronautical RADIATORS

Are used on the highest grade military aeroplanes and flying boats made in America.

We use only the best materials obtainable and our workmanship is unsurpassed.

EVERY RADIATOR FULLY  
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Wire Your Requirements*

### Rome-Turney Radiator Co.

Makers of the famous "Helical Tube"  
Radiators for Trucks and Tractors

RIDGE STREET, ROME, NEW YORK

*Our exceptional facilities enable us to make speedy deliveries*

## QUEEN-GRAY INSTRUMENTS *for* AERONAUTICS Indicating and Recording Instruments

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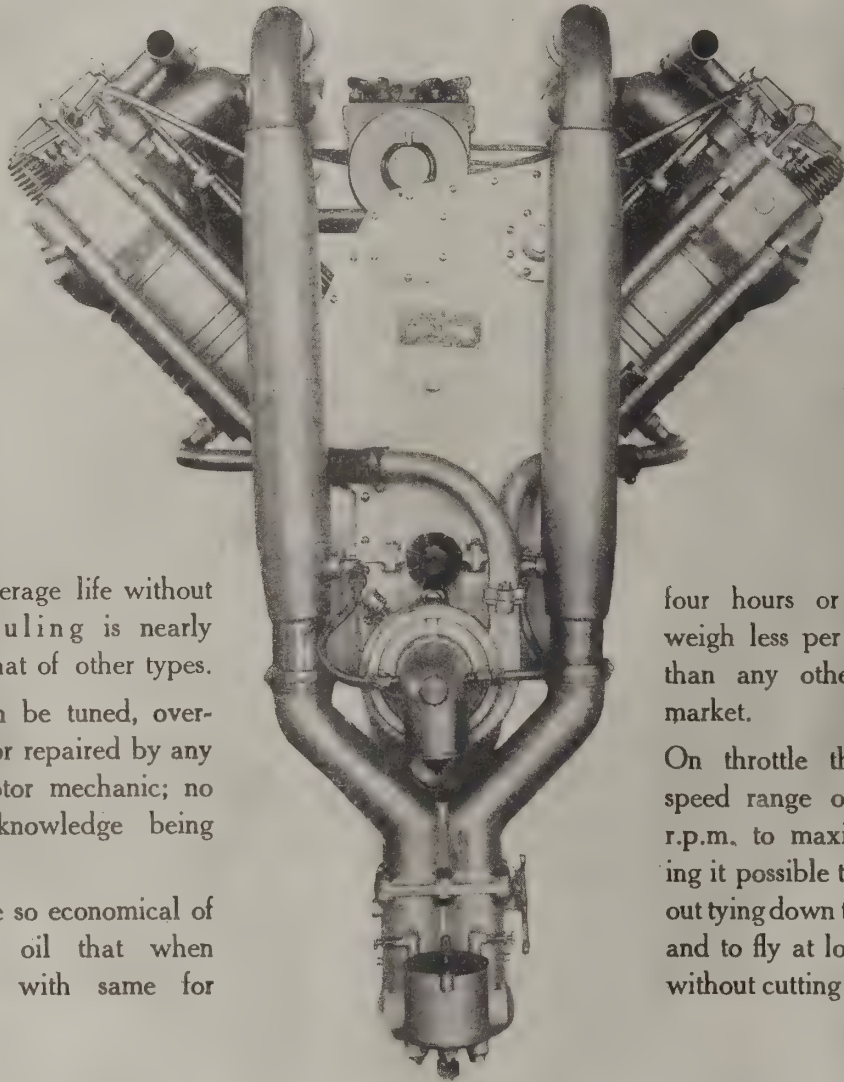
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# AERIAL AGE

## WEEKLY

Vol. I. No. 7.

MAY 3, 1915

10 CENTS A COPY



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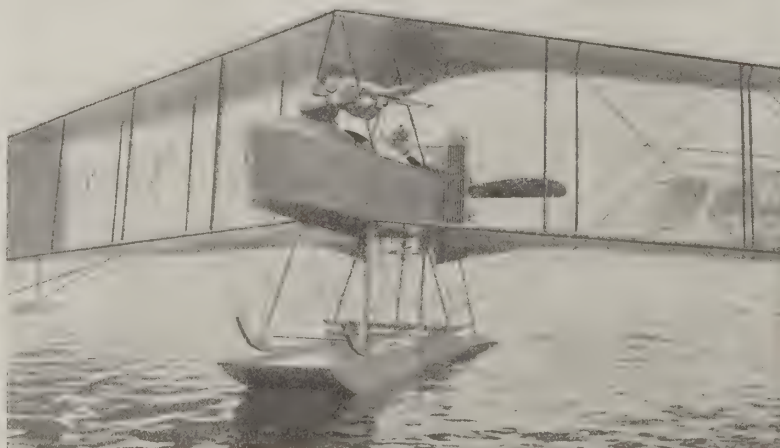
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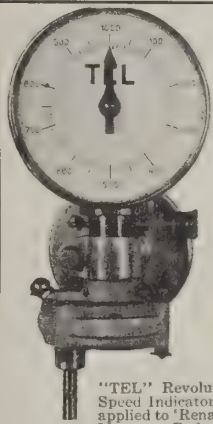
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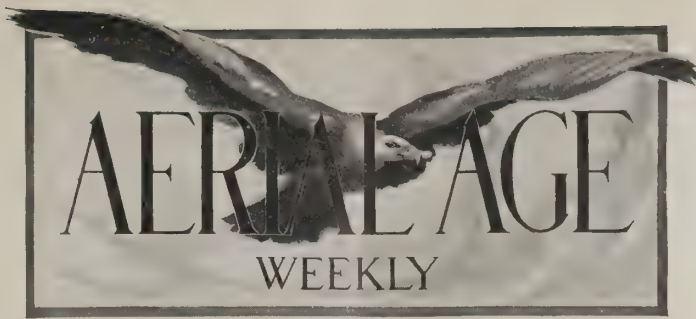
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SUBSCRIPTION RATES:  
Domestic, \$4.00 per year  
Foreign, \$5.00

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PUBLISHED WEEKLY BY THE AERIAL AGE COMPANY, Inc., 116 West 32nd Street, New York City

Entered as Second-Class Matter March 25, 1915, at the Post Office at New York, N. Y., under the Act of March 3, 1879

VOL. I.

NEW YORK, May 3, 1915

No. 7.

## The National Aeroplane Competition

**T**he country at large is giving a hearty reception to the National Aeroplane Competition, the last developments of which are given elsewhere in this number with the names of twenty-two prominent aviators and constructors who have made application for entry.

The plan of the Competition is admirably well thought out in every way. The organizers, men of national importance, acquainted with the needs of the country, and interested in national warfare, have the resources necessary for making the movement nation-wide and have a clear idea of the part which states, communities, organizations, and individuals should take to make the competition a success—and the returns in distinction which success will bring as a reward to those who participate.

The Aero Club of America by offering one of the \$10,100 prizes for the Competition has insured its success. The Aero Club of Illinois offers the other prize of \$10,100, which gives the National Aeroplane Competition the substance necessary to induce seventy-five of the aviators and constructors who have, or can get, machines on time, to participate from the very beginning.

That large prize to induce the aviators who participate in the competition to continue their flights across the Continent will be forthcoming there is little doubt. For a comparative small sum a city or organization can attain permanent national prominence, as the Competition is but the first step towards popularizing aeronautics, and the cities being selected as official landing and starting places will receive first consideration in the plan to establish permanent aircraft landing stations which is being developed by the representative committee of which Rear Admiral Peary is chairman.

Massachusetts's prompt action on the suggestion that an aeroplane be entered to represent the state in the Competition and then be used to start the aviation corps for the militia, deserves commendation. Governor Walsh, of Massachusetts and Mr. Charles F. Glidden will, for an insignificant sum, afford their state a distinction and prominence that could hardly be gained at an expenditure of a thousand times the amount to be spent to enter the aeroplane in the Competition. The fact that Massachusetts will be the first state to have started an aviation corps for the Militia will go down in history.

## Flying Corps to be Separated From the Signal Corps?

**M**R. Gordon Bruce, aeronautical editor of the New York *Tribune*, writing on the eve of the meeting of the Advisory Board, discussing the pressing issues which the Board was expected to consider, says:

"The members of the board may not, and probably will not agree on two important points, to wit: the separation of the flying division from the Signal Corps, and the inadvisability of government construction of air craft.

"In the matter of the first proposition the best argument in favor of it is the fact that each of the great foreign powers has done it. The aviation division is essentially a bigger branch of the service than the Signal Corps, by which it now is controlled. England found it expedient to go a step further and combine her naval and army flying divisions into one great, new arm of the service.

"Then, too, the greater part of the work done by aviators in modern warfare does not properly come under the activities of the Signal Corps. Range finding, bomb dropping and combating hostile air craft have a place of their own. The separation is bound to come and the sooner the better.

"As for the building of aeroplanes by the government, it is absurd, and would prove a fatal blow to the development of

aeronautics in this country. In the first place, it would wipe away at one stroke the work of American manufacturers, who have struggled through the lean years, knowing that sooner or later the government must recognize the need of machines and become a large purchaser.

"Other countries have tried the experiment and failed. Machines cannot be built as cheaply nor as quickly as by private enterprise. Of course, that should not be the case, but it is, just the same.

"The decision of the government to go into the manufacturing business would be the signal for wire pulling on the part of legislators and other politicians who might hope to acquire manufacturing plants in their own states. As soon as politics and pork barrels are mixed up with the business of aircraft the man in the air has one more factor working against his life.

"The new board has some serious problems confronting it. The eyes of every engineer and scientist in the country are upon it. If it acts in an unprejudiced, intelligent manner it will work untold good. If it does not do so its members will become entangled in the wreckage of the most important branch of the national defence."

The suggestion to separate the aviation division from the Signal Corps is a good one. Congress does not seem disposed to enlarge the Signal Corps and to have the air service as a section of it means limiting its expansion. The action of the Committees on Military Affairs of both Houses in the past session gave an intimation that one of the reasons why they opposed an increase for aeronautics was that as the Signal Corps's appropriation amounted to only \$300,000, the aviation side would have been predominant if more than \$300,000 was given for aeronautics.

Thus aviation suffered through being connected with the Signal Corps.

It is, of course, regrettable that the separation must take place, because the Signal Corps has done its best to nurse the new art in the past six years and has accomplished much considering the limited resources. But, for the good of the air service, and the efficiency of the military establishment as a whole, the separation must be effected.

## Congressman Mann's Discrediting Record in Aeronautics Nips Presidential Aspirations

**I**N the bulletin of the Aero Club of Illinois, published by our monthly contemporary *Flying*, we find the following:

"Because of the attitude of the Hon. James R. Mann towards aviation the Aero Club of Illinois proposes to educate the local press against supporting his candidacy for President which, it is rumored, the Hamilton Club of Chicago is booming."

The Aero Club of Illinois is to be commended for its stand. If a Congressman is unable to realize the value of aeronautics, and opposes giving even the small support which this government has given it, he certainly is not fit for the Presidential chair.

We fear that if Congressman Mann's record in aeronautics is held against him, he will never be supported for President, nor for Senator, nor for the House of Representatives, nor even plain member of a plain progressive institution, because his is a very discrediting record.

That very reliable and permanent paper called the *Congressional Record* shows Mr. Mann as having opposed during the past two years the most modest appropriations for Army and Navy Aeronautics and for experiments in aeroplane mail carrying. The records furthermore show that he opposed these measures without consideration to the needs of the nation, in utter ignorance of the subject about which he was speaking, in utter disregard of the wishes of a large part of his constituents.

Mr. Mann boasts much of the interest he has shown in 1909 towards the Wright brothers' experiments and about his efforts favoring the acquisition by the government of their machine.



Since then his interest seems to have found a peculiar field of action, for his chief concern about the small appropriation for Army aeronautics that was debated in the last session of Congress is recorded as follows:

"Without authority being given to employ passenger vehicles, if a man goes out in a flying machine and the machine breaks down, how would you carry him in? Would you have to carry him in on the back of some one?"

Regarding the Nation's unpreparedness in aeronautical matters and the dangers this state of affairs holds in the store for our future, Mr. Mann offers a panacea that would seem childish if the war raging on the other side did not give it a terrible denial:

"If we have a war, we will call upon every man who has a flying machine or who can fly a machine to enter the Government service in some way, and probably get some of our best men and best machines in that way."

In spite of the tragic example of Belgium whose army was overpowered to a great extent owing to the insufficiency of its Flying Corps—which by the way possessed at the time four squadrons of four machines *in flying* condition—in spite of this, we say, Mr. Mann thought it fit and proper to oppose the appropriation of one million dollars for Army aeronautics, which is in sore need of machines.

Nor did the Navy aeronautics appropriation bill find more favor in the eyes of the gentleman from Illinois, according to Mr. Mann:

"It is contradictory to common sense that the Navy should have more use for the aeroplanes than the Army . . . ." (!!!)

Elsewhere:

"The aircraft are being made use of wherever there are armies and they are not being made constant use of anywhere by the Navy."

The German seaplanes that co-operate with Zeppelins in the aerial blockade of Great Britain, the British and French seaplanes that locate submerged mines and concealed batteries in the Dardanelles, the Russian seaplanes that bombard Turkish Black Sea ports give a forceful denial to these foolish utterances.

## Prospects and Retrospect in Automobile Field Illustrating Possibilities of Aeronautics

**T**HAT on January 1st, 1916, there will be two and one-half million automobiles in the United States, appears a somewhat wild prediction, when it is considered that there are only about 600,000 automobiles in the whole world, outside of this country. Figures collected from the various States of the Union show that on February 1st, 1915, the number of registered cars exceeded 1,900,000, and the growth in the last 13 months has been equal to not less than 600,000 per year. As the rate of increase during the individual months has been much greater toward the end of 1914 than in the early part of that year, it seems certain that fully 600,000 cars will be added between February 1st, and December 31st, 1915.

Such are the prospects, as estimated by our contemporary the *Scientific American*. Now let us retrospect—quoting some interesting facts that have come to the editorial desk in a booklet issued by the J. I. Case T. M. Company, of Racine, Wisconsin, which came, by the way, with a report stating that this firm is developing an aviation motor.

The introduction in the booklet reads, in part, as follows:

"Since 1842 this company has been manufacturing and selling machinery throughout the markets of the world. Starting in that year with threshing machines, we have during this period, made the very best threshing machines. We have abundant evidence to substantiate this claim. A little later in our history came the manufacture of steam engines, to supplant the horsepower which had previously been used to drive the threshing machines. It is generally admitted that Case steam engines are without equals. The results of the International Motor Contests at Winnipeg, Manitoba, Canada, confirm this admission. Subsequent to steam engines, and the many other side lines which developed during this period, came the road roller, as the natural outcome of the steam traction engine. With road rollers, of course, came other road machinery. In 1911 we put on the market our first gas traction engine. Others had been out before, but it was not until then that we believed that we, or anyone else, had developed a gas traction engine on which we felt safe in placing our name. Not that we were tardy in our attention to

this trend in mechanical development, as twenty years before we began experimenting with the internal combustion engine—the gas engine—building the now famous Patterson tractor. Case gas tractors today are found throughout the fields of the world, doing as other Case machinery has always done, the very best work at the least cost.

"Coincident with the production of gas traction engines, came the motor car—a gas engine, refined and perfected beyond the stage of the traction engine, to be sure, but fundamentally, a solution of the same problem. Robert Fulton's 'Clermont' was no more like the modern transatlantic liner than was this Patterson tractor like the modern motor car. But in each of these pioneers lay the seeds which were bound to bear the successful fruit.

"The gas motor—the internal combustion engine—problem is but an outgrowth of that of steam, as evidenced by the fact that the first automobiles were steam powered. Here is a singular fact in connection with this company's growth into the automobile industry. One of the first, possibly the first, horseless carriage in America was built in Racine, Wisconsin, in 1871, by J. W. Carhart, now of San Antonio, Texas. The success of this machine caused the legislature of Wisconsin in 1875 to offer a bonus of \$10,000, 'to be paid to any citizen of Wisconsin who shall invent and after five years' continued trial and use shall produce a machine propelled by steam, or other motive agent, which shall be a cheap and practical substitute for the horse and other animals on the highways and farm.' In the building of this primitive motor car this company rendered conspicuous service, according to the inventor, who says—'Accordingly I called on the foreman of the foundry and machine shop of the J. I. Case Threshing Machine Co., who very kindly aided me to the fullest extent, making patterns in the Pattern Department, casting my steam cylinders and cylinder heads, boring out and turning the same, together with the main shaftings and the like. But for this timely and efficient aid it would have been difficult for me to have accomplished my work.'

"Thus this company was early and logically identified with the solution of the automobile problem. Our history shows a growth strikingly parallel with that of our latest product, the automobile.

"So we expand in the natural evolution of the means of locomotion. *Some day we may be making flying machines; at least, we have been experimenting.* During the years in which the products of this company have gone out into the world, to lighten its labor and increase its happiness, we have been content in our knowledge that each machine was fit to bear our name, and, therefore, was bound to add to our reputation for the production of honestly reliable machinery. We are striving to add to the glory of this name.

We have in aeronautics in a few years seen inventors and experimenters grow to prominence and become the heads of large firms. Aeronautics itself has grown from an experiment into an applied art in the short space of time of six years.

The future holds tremendous possibilities:

"Aeronautics is fast becoming related to every branch of human endeavor, and every day new developments take place which make us realize new possibilities. No movement ever became world-wide in so short a time; no other invention has revolutionized the military art so thoroughly as to create a new arm and make it necessary to reconstruct the fundamentals of tactics; no other art promises in its prospective developed stage such valuable services to the human race as aeronautics. Nor has any movement or invention ever opened such wonderful possibilities or offered such stupendous rewards to those who become connected with its advance. It has much to give for investments of time and capital. Aeronautics to-day is the only field that is not exploited; it offers stupendous rewards in gold and distinction for services rendered. Through the tremendous strides forward of aeronautics there are wonderful opportunities shaping themselves; possibilities for the employment of ingenuity, genius and skill of unlimited scope; business opportunities greater than have ever been created by progress in any one line of human endeavor; problems of engineering as huge as were solved by Goethals, McAdoo and other master builders; judicial and legal questions to be decided as stupendously difficult as any Gladstone would wish to have them; possibilities for the development of world-wide peace greater than ever were conceived; problems of transportation to be solved by the application of the aircraft as wonderful as any economist could wish; opportunities to gain distinction splendid enough to satisfy the most ambitious person."



# THE NEWS OF THE WEEK

## Admiral Pond Flies in Curtiss Monoplane Boat

Rear Admiral Charles F. Pond, who is to relieve Rear Admiral Robert Doyle as commander-in-chief of the Pacific fleet May 5, made a 20-minute flight at an altitude of 2,000 feet recently in the Curtiss monoplane flying boat piloted by Raymund Morris. Admiral Pond not only had the distinction of being the first admiral in the United States navy to make a flight at North Island, but he also is the first officer in the navy to be taken aloft in Morris' monoplane flying boat—the only craft of its type in the United States.

For more than ten minutes Admiral Pond and Morris were above the cloud banks. The flight was made at a speed of seventy miles an hour, and upon alighting the naval officer said he enjoyed to the limit his first aerial voyage.

Charles, a son of Admiral Pond, is a student at the Curtiss aviation school. He is a civil engineer, and is taking up aviation merely for pleasure purposes.

## Throws Life Belts to Men From Aeroplane

Despite the efforts of Harry Christofferson, an aviator, to save them by dropping life preservers from his aeroplane, four men, believed to have been crab fishers, drowned in San Francisco Bay on April 20, when their gasoline launch went ashore in the breakers off Great Highway.

Scores of persons witnessed the accident from automobiles.

## Niles Tries Huntington Tractor Biplane

Charles O. Niles, aviator, who returned recently from Mexico, where he scouted for Gen. Carranza, made a lofty flight this afternoon from the Garden City Aerodrome to try out a new biplane, a Huntington messenger carrying machine designed by Howard Huntington, secretary of the Aero Club of America.

Niles took the machine up 7,000 feet and was up half an hour. The biplane worked to his satisfaction.

## William Thaw Safe

Fears for William Thaw, 2d, who is serving as an aviator with the Foreign Volunteers fighting for France, were set at rest when

his father, Benjamin Thaw, of Pittsburgh, received a cablegram from Lawrence Slade, a relative in Paris, which read: "William safe."

Thaw had been reported in despatches from Paris as having been killed while scouting near Verdun. Mr. Thaw said he did not know just where his son was stationed, but he could reach him by mail. Mr. Slade is keeping in close touch with him.

## Governor Emmet B. Boyle of Nevada Flies with Roger Jannus

Governor Emmet B. Boyle of Nevada enjoyed his first trip in the air recently at San Diego when he flew with Roger Jannus in the new Jannus flying boat. The governor was up for exactly ten minutes and after sailing to Coronado, returned and circled the flagship Colorado at an altitude of 150 feet.

When the flying boat slid back to the platform on Market street, Governor Boyle, flushed with the exhilarating trip, shouted to his wife: "I wouldn't have missed it for a farm." It was his first trip in the skies and was the realization of an ambition he has nourished for a number of years.

The governor had heard of the unusual conditions for aviation in San Diego and when he started for San Francisco to dedicate the Nevada building on the Exposition grounds it was with the determination to make a flight in an aeroplane.

## Beech May Fly at Manitou

Jesse Chamberlain, one of the close friends of A. C. Beech, who has appeared in Rochester for the last two years, has received a letter from him in which he made a proposition to appear at Rochester for any period that should be decided upon.

Mr. Beech suggests that he come with his hydroaeroplane and stay for four days carrying passengers over the waters of Manitou.

## Villa Gets Four Wright Aeroplanes

A despatch from Texas states that four Wright aeroplanes in charge of John S. Berger have been sent to Gen. Villa's camp from Juarez. They will be used for scouting purposes and to drop bombs on the Carranzista forces.

## Vincent Astor's Flying Boat Tested

Vincent Astor witnessed the first two flights of his new flying boat at Marblehead, but did not venture out in the craft himself. To-morrow he will skim along the surface of the water or glide through the air in the latest machine turned out by the Burgess company.

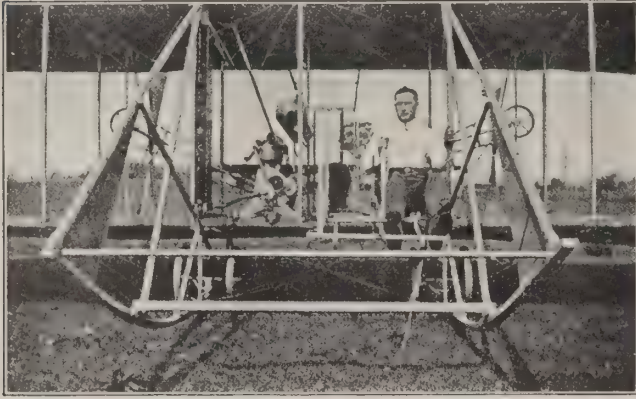
It is said that Mr. Astor will pay \$14,000 for the machine, and he intends to remain here until he can run it himself. Had there not been a sudden shift of the wind from west to east Mr. Astor would have taken a ride.

Clifford L. Webster, who demonstrated the flying boat, drove along the surface of the water until clear of the harbor. Then he swung into the fresh easterly breeze, advanced his spark and in a moment was hitting the wave tops. Another moment and the machine rose with perfect steadiness. Webster did not go more than fifty feet above the water, and described a long arc out beyond the neck. He came to the water on the leeward run, landing as gracefully as a duck, and with hardly more splash.

This photograph shows the Astor party during their visit to Coronado Beach, Cal., when Mr. and Mrs. Astor made flights with Mr. Raymund V. Morris.







H. A. Young, of Elyria, Ohio, in a Wright Biplane

#### Burgess Company Rushed With Orders

**T**HE Burgess Company of Marblehead, Mass., is being rushed with orders and a full force of men are working at top speed in turning out machines for the British Government, as well as the United States and other governments. Work on the order for three special machines for the United States Navy is progressing rapidly.

#### Air Feats Begin at Overland Park, May 1

The aviation season at Overland Park, the site of the Mid-continent Exposition club will open about May 1. It is expected that many of the foremost aviators of the United States will visit Kansas City this summer.

Arthur Smith, who, in a measure, has succeeded to the loop-the-loop honors of Lincoln Beachey, will be seen at Overland this summer. He is credited with having accomplished thirty-five loops on one trip. Smith received his early training at Overland Park.

De Lloyd Thompson, who thrilled thousands last year with his spectacular flights, will return this year with a new air feat, which he has called "The Tumble." The machine rises 3,000 feet and the operator appears to lose control of it. He tumbles almost to earth before he regains control.

Captain H. E. Honeywell also will make balloon flights from Overland this summer.

#### Carranza Soldiers Fire on U. S. Aviators

Carranza troops at Matamoros fired on a United States army biplane flying over Fort Brown near Brownsville, Texas.

About twenty rifle shots and fifty shots from a machine gun on the Mexican side, it is believed in army circles here, were fired at the aircraft.

The machine landed safely.

#### Peoria Aero Club is Incorporated

The Peoria Aero Club, with a capital of \$5,000, has been incorporated in Springfield. The incorporators are W. H. Ballance, W. H. Webster, Dr. F. E. Baldwin and A. W. Harris.

#### Great Activity at the Sturtevant Works

Since the announcement of the new 140 H. P. Aeronautical Motor, the B. F. Sturtevant Co., of Boston, has been doing rushing business and Mr. Noble Foss, manager of the Aeronautical Department states that the present outlook indicates a most prosperous season and that five hundred men must be put on the manufacture of these engines to meet the demand.

The Sturtevant Works normally employ fifteen hundred hands but it would not be possible to devote the entire force to the production of aeronautical engines on account of the large volume of business in other lines.

#### To Build 12 Monoplanes

Work began at Overland Park, Kansas City recently on the first of twelve monoplanes which, it is stated, Frank Champion has the contract to build. Twenty workmen are employed and the monoplanes will average in cost \$9,000 each. Houpert, a French aviator for whom the first machine is being constructed, is at the park watching the work.

Houpert and Champion are planning an aerial sham battle for the opening of the aviation season, with the dropping of bombs on a miniature battleship on the lake as a feature.

#### Barge Hits Sperry's Plane

Lawrence Sperry, who makes almost daily flights in his Curtiss flying boat up and down East River, met with a mishap recently when his aircraft fouled a barge in tow off the navy yard.

Sperry had returned from a flight and was resting in front of his hangar at Little Street, when the passing barge, borne out of its course by the tide, sideswiped his craft and wrecked one of the planes.

Sperry climbed aboard the barge and gave the man at the helm a piece of his mind, and embarked again on his 'plane.

#### J. R. Gammeter Constructing Taube Type Aeroplane in Akron

J. R. Gammeter, one of the pioneer aeronautical experimenters who has built a number of experimental machines, has under construction the first American Taube Aeroplane. The machine will be a biplane with Taube wings, somewhat resembling the early German Albatross biplanes and will be equipped with a Curtiss OX motor.

#### New Incorporation

The Texas School of Aviation, Dallas; capital stock \$8000. Incorporators: Lestere Miller, Paul Van de Velde, Curry McCutcheon. Purpose to support the education and training of men and women in the science of flying in the air.

#### CATALOGUE FILE

A catalogue file of all matter pertaining to aeroplanes, motors, accessories, etc., is being collected for the convenience of the readers of *Aerial Age*.

Every manufacturer is urged to make this file complete by sending bulletins and pamphlets of all goods handled.



Curtiss Students at San Diego (Cal.) School



### Garden City Aerodrome

Activities at the Garden City Aerodrome continue on the increase. During the past week the Heinrich, Huntington, Gallaudet, Schmitt and Sloane machines were to be seen out almost every day.

P. C. Millman was busy flying the Gallaudet and Schmitt machines. On Friday he caused those on the field quite a bit of uneasiness when he became lost in the mist. He had gone up in the speedy little Schmitt monocoque to demonstrate to Col. Chapa, of the Mexican Carranza forces, the climbing capabilities of the machine when he was enveloped in a heavy mist which entirely cut off his view of the ground. After making a turn at the far end of the field he was seen to be heading towards the sea and was soon lost to view. As the wind was blowing in the direction of the sea and he only had gasoline aboard for a half-hour's flight, the onlookers put in an anxious twenty minutes before they finally heard the roar of his motor way up in the clouds long before he became visible.

He said after he landed that he had been lost practically throughout the entire trip, but knowing which way the wind was blowing had turned and headed into it, descending lower and lower all the time until he finally was able to recognize Hicksville. From there it was only a matter of a couple of miles back to the field.

Earlier on the same day, John Guy Gilpatric made a trial flight in the new Sloane military tractor biplane with Walter H. Phipps as passenger, which was interrupted owing to motor trouble.

Col. Chapa was taken up by Harold Kantner in the Huntington military tractor.

A new machine which has arrived at the field is the little 80 Gnome underslung monoplane, constructed by Joseph Belanca which will shortly be out for trials. In this novel and speedy little machine the pilot sits below the wings with the motor mounted up in front of the main planes.

### A New Flying Boat Launching Device

By Lawrence B. Sperry

It has always been a problem to get a big flying boat in and out of the water. Some owners of flying boats have built special cars running on rails which can go down into the water. The flying boat is placed upon the car and the motor, or other tractional means, is started for hauling the whole thing up the platform into the hangar. This is quite expensive and not portable. Besides, someone must go into the water up to his waist to float the machine on the car.

Another method is to run the flying boat up the runway a short distance and lift the tail high in the air, whereby a truck is placed under the boat. This takes a good many men, about seven, and it is hard on the boat to run it by its own power up on the shore.

The wheel gear used on my Curtiss flying boat, shown in the accompanying photograph can be attached to the boat by merely leaning over the edge, no one being obliged to get wet, as it is a simple operation requiring only a minute to put them on. The wheels are secured to the wings by two sockets, one situated at the front beam and the other at the back beam just under the first pair of struts. The front socket is a tongue and groove joint whereby the wheel frame when it is hanging vertically from its sockets can be shoved in the socket and it is locked when it is turned and latched against the boat. When the machine is lowered down the runway the pilot merely leans over the side and raises the rod shown in the photograph. Since the machine is resting on the water the wheels will turn in their sockets until the tongue comes opposite the groove and a slight backward push of the wheels releases the front socket and a forward pull brings them clear of the back socket. Floats are attached so the wheels float in the water and can be pulled in by a boat hook. In attaching the wheels the operation is similar. The pilot leans over the side of the machine, picks up the wheel and puts the rear end of the upper bar in the socket and pushes the other end of the bar forward into the front socket. The wheel may now be pulled toward the boat and latched.

Pieces of rubber are placed on the sides of the boat so the wheels do not scratch it in any way.



View Showing Method of Attaching the Wheels to the Sperry Flying Boat



Sperry Wheel Attachment



The Sperry Launching Wheel Gear in Place on Curtiss Flying Boat

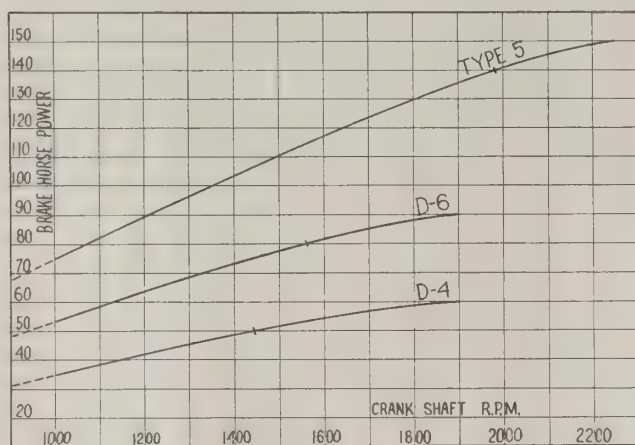


# Sturtevant Motors

Models D-4 and D-6

By N. MacCoull, M. E.

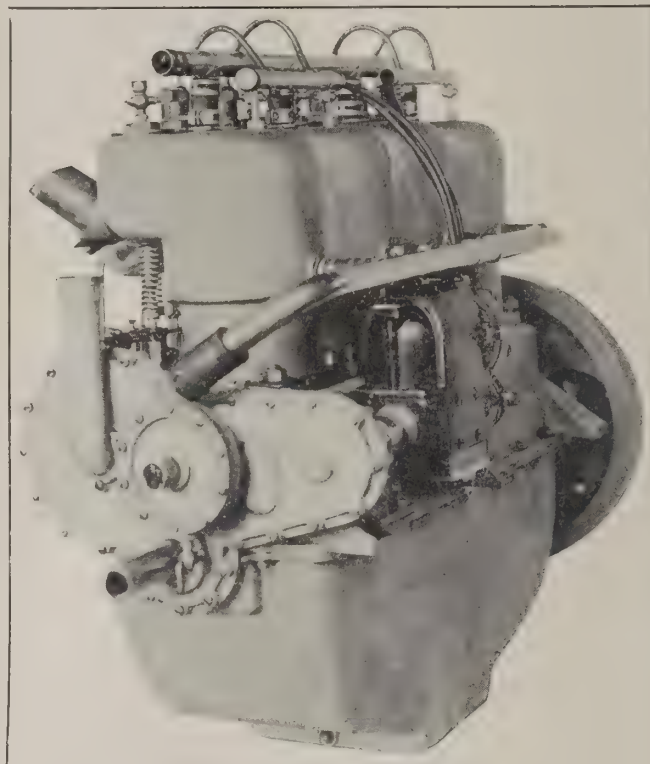
**B**ESIDES the model 5 which was described in the February 29th issue of *Aerial Age*, the B. F. Sturtevant Co., of Hyde Park, Mass., are manufacturing four and six cylinder, four cycle, water-cooled motors, known as models D-4 and D-6 respectively. They have a bore and stroke of  $4\frac{1}{2}$  inches, and differ only in the number of cylinders. The D-4 is rated at 50 h. p. and the D-6 at 80 h. p. The horsepower curves of these motors as well as of the model 5, are reproduced from the article referred to. Every motor turned out by this company is tested on a dynamometer as shown in the accom-



panying cut. On this test the horsepower of the motor is accurately determined and every motor is required to show its rated power before it leaves the test plate. It is then subjected to a rigid test with the propeller under the same conditions in which it operates in actual service.

The workmanship and materials used in the construction of these engines are of very high quality. All parts are made in jigs and are absolutely interchangeable, a valuable point when it is desired to replace a broken or worn part.

As is at first noticeable with all Sturtevant motors, these models adhere closely to standard automobile practice such as the vertical arrangement of the cylinders, their cast construction of L-head design with integral water-jackets, and the loca-



tion of the valves on one side. The cylinders are cast of special semi-steel in the company's own foundry.

The valves are of large diameter, made of tungsten steel, and may be easily removed from the cylinders for inspection or grinding, without disturbing any other part of the motor.

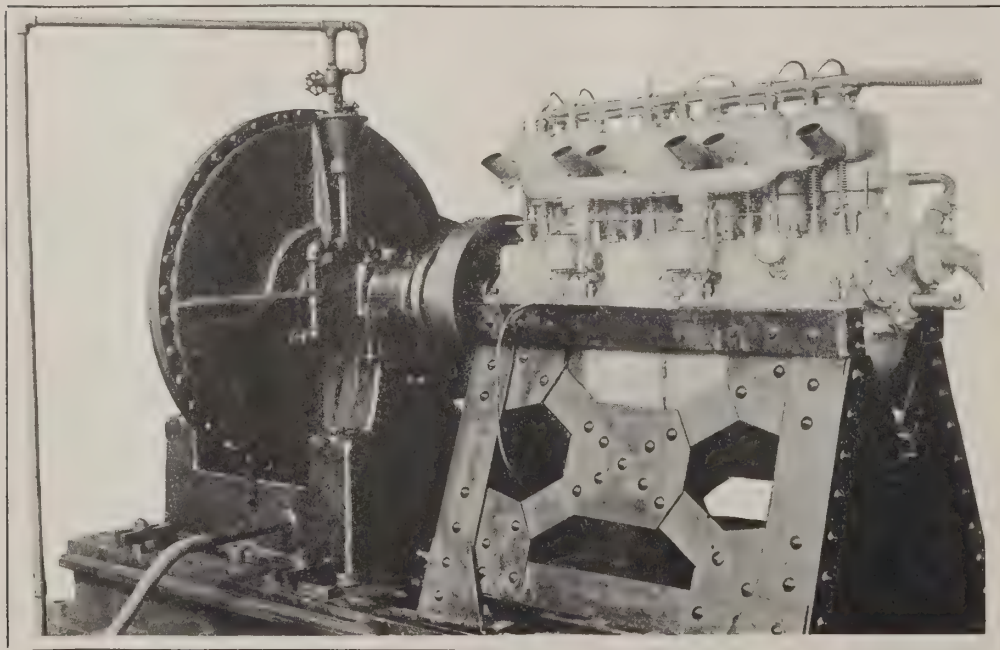
The pistons are of the same material as the cylinders, well ribbed for strength and provided with three compression rings. The piston pin is made of chrome nickel steel, bored hollow, hardened and ground.

The connecting rods are of H-section, drop forged of chrome nickel steel and properly heat treated to obtain the maximum

strength of this material. The big ends are fitted with interchangeable bushings of Parsons' White Brass. The small ends are bushed with phosphor bronze. The connecting rods and pistons are carefully balanced to reduce vibration.

The crank shaft is machined from a billet of the highest grade chrome nickel steel. It is of large diameter and bored hollow throughout insuring maximum strength and minimum weight. A bearing is provided between each throw and all pins and journals are accurately ground to size.

The base consists of two castings of a special aluminum alloy. The upper half of the base is designed with a view to strength and rigidity rather than extreme lightness, so that



No distortion will occur when in use in the aeroplane. It contains the main bearings supporting the crankshaft and these bearings are fitted with renewable bushings of Parsons' White Brass. The lower half of the base is of very light construction designed for the purpose of containing the lubricating oil. As shown in the cuts, this casting slopes at an angle from either end toward the well in the center, making it possible to run these engines at a considerable angle.

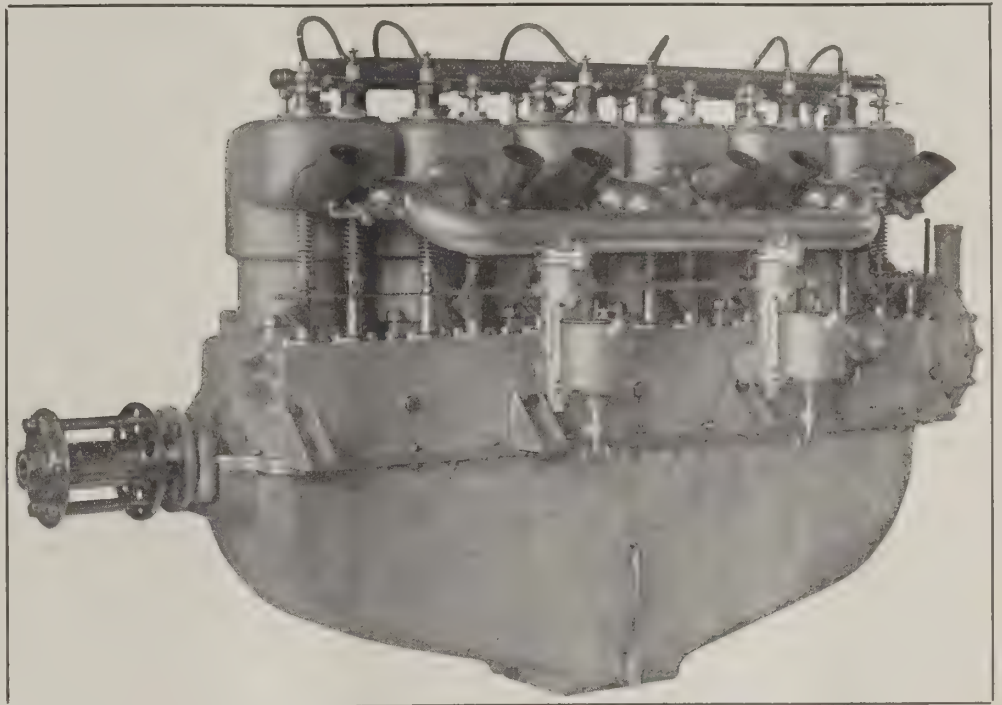
Lubrication is of the complete forced circulating system, a high pressure being maintained on all bearings by a rotary pump which is submerged in the oil in the lower half of the crankcase and operated by a vertical shaft through helical gears from the camshaft. All oil passages are cast integral with the base, no piping being used. The entire surface of the lower half of the base is covered with a fine mesh screen through which the oil passes before reaching the pump. The oil capacity is sufficient for four hours' continuous operation under full load. A sight glass is provided for determining the amount of oil within the base.

The camshaft is contained within the upper half of the base and supported in large bronze bearings. The cams are integral with the shaft and ground to the proper shape and finish. The gears operating the camshaft, magneto and water pump are contained within an oil tight casing and operate in a bath of oil.

The well known Zenith carburetor is used, two being used on the D-6 with both throttles fastened to one rod so that they operate in unison. Provision is made to supply hot air from the exhaust so that the mixture will not be affected by changes in the temperature of the air.

The use of two carburetors on six cylinder motors now seems to be universal practice both in this country and abroad. This is due to the fact that it is impossible to get the maximum power where six cylinders are supplied from the same carburetor because of the overlap of suction strokes. It is of interest to note that in the case of the D-6 motor the manufacturers state that they were able to obtain only 47 h. p. from this engine with a single carburetor, while this was increased to 90 h. p. with the use of two.

Ignition is supplied by a Bosch waterproof magneto which furnishes a spark of the same intensity in the retarded position

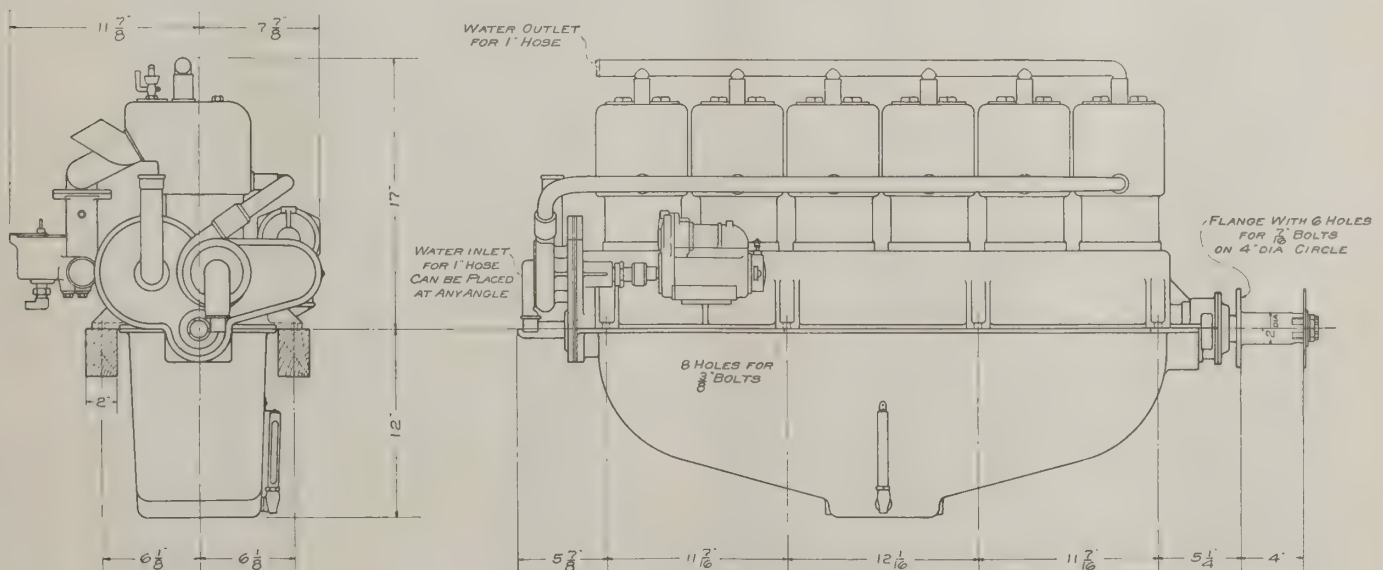


as when advanced, so that the motor may be readily started without the use of batteries.

The water circulation is accomplished by a centrifugal pump which delivers a large quantity of water through the cylinder jackets and maintains a uniform temperature around all parts of the cylinders. The size and form of radiator are made to suit the particular requirements of each individual installation.

A starting crank can be furnished which engages with an extension of the crankshaft on the rear, making it possible to start the motor from the machine. The crank handle may be extended through the control board if desired. A light weight and extremely efficient muffler can also be supplied which effectively silences the exhaust with only a slight loss of power.

The weight of these motors complete with carburetor, magneto and flange for attaching propeller, but without radiator and propeller, is 230 pounds for the D-4, and 325 pounds for the D-6. This means 4.6 pounds per horsepower for the former, and 4.06 for the latter. These weights are not at all high considering the reliability obtained with this standard construction. In extended flights the total weight of fuel and motor will probably be less than with some of the lighter motors because of their greater fuel consumption. The D-6 motor on a four-hour test during which the horsepower averaged 83, and the speed 1616 RPM, used 190 pounds (32 gals.) of 64.5° gasoline, and 19.22 pounds of oil. This is only 0.572 pounds of gasoline, and 0.058 pounds of oil per horsepower-hour.





## \$20,200 Prizes Offered for National Aeroplane Competition

**T**WENTY-thousand two-hundred dollars for prizes in the National Aeroplane Competition have already been offered by the Aero Clubs of America and Illinois, and there are prospects for \$150,000 in prizes from different cities and two prizes of \$25,000 for trans-continental flights; and the state of Massachusetts is planning to enter an aeroplane to represent the state in the Competition and twenty-two prominent aviators and constructors have already applied for entry.

This is the status of the National Aeroplane Competition at the time of going to press—a remarkable status considering that it is only three weeks since the project was first made public.

### Aero Club of Illinois' Daily Prizes

The Aero Club of Illinois' decision to offer one of the big prizes was announced to the Contest Committee by telegram on April 28th—as *Aerial Age* was going to press. The Contest Committee gave immediate consideration to the matter and decided that whereas Chicago is so located that aviators will fly there from all points of the compass, it should have the privilege of offering the Daily Prizes, instead of the prizes for the eight best records made during the Competition.

The Aero Club of Illinois' \$10,100 will therefore, be divided into 101 prizes of \$100 each, to be awarded each day of the Competition, (which starts July 4th, and ends on Columbus Day, October 12th), to the aviator who holds the record at the end of each day, said record to have been made under the conditions specified by the Contest Committee of the National Aeroplane Competition.

The rules provide that the aviator may start at any time, on any day during the Competition, but that he must start from an official aerodrome or field, and must fly toward some other official landing place. These landing places for both hydroaeroplanes and land aeroplanes are being established by hundreds all over the United States. The distance he covers in each flight (which is to be limited by the terms of the Competition to ten hours) measured in a straight line, is what will decide the awarding of the prizes. The aviator holding the record at the end of each day wins the \$100 prize.

### The Aero Club of America's Best Record Prizes

The Aero Club of America's \$10,100 prize will be divided into eight prizes, to be awarded to the aviators making the eight best records during the Competition. The prizes will be as follows:

\$3,500, \$2,500, \$1,000, \$750, \$500, \$250 and \$100.

The offer of these prizes by the Aero Clubs of America and Illinois insures the success of the Competition, as this amount is sufficient to induce at least 75 of the 200 licensed aviators of the country to participate. Twenty of the most prominent aviators and constructors have already made application for entry.

The prospects seem to indicate that a large percentage of the 1,300 cities of the United States who have been asked to participate in the National Aeroplane Competition, will offer substantial prizes to induce the aviators entered in the Competition to fly to their cities during the contest.

The conservative estimate of the Contest Committee is that the prizes will amount to at least \$150,000, and that there will be two prizes of \$25,000 for transcontinental flights.

Los Angeles and San Francisco, California, are bidding for the privilege of the official starting and landing place for aviation events in connection with the National Aeroplane Competition in California, according to telegrams received to-day by the Contest Committee of the Competition, and the State of Massachusetts is planning to enter a machine to represent this state in the Competition, which will be used after the Competition by the National Guard of Mass.

Mr. Glenn L. Martin, the prominent Los Angeles aviator and constructor, has telegraphed to the Contest Committee informing them that the Chamber of Commerce and other influential bodies of his city wish to offer whatever prizes are necessary to make Los Angeles the official starting and landing place for all aviation events in California in connection with the National Aeroplane Competition, and asked what size prizes should be offered to induce a dozen aviators to undertake the transcontinental flights from the Pacific to the Atlantic and from the Pacific to the Atlantic.

In previous telegrams to the contest Committee, Mr. Martin stated that Los Angeles is very anxious to become the aeronautical center of California, and to that end is willing to offer substantial prizes to make that city the official starting and landing place in California for all events connected with this country-wide Competition. The Contest Committee has replied to this that prizes aggregating between \$10,000 and \$25,000 would surely induce a score of the seventy-five aviators who are expected to participate to continue their flights across the continent in both directions, those starting from the Pacific Coast continuing on to the Atlantic, and those starting from the Atlantic continuing on to the Pacific.



Raymond V. Morris



Oscar A. Brindley



W. C. Robinson

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## Competition by Aero Clubs of America and Illinois



Charles F. Niles



W. L. Brock



© Amer. Press

Wm. S. Luckey

As twenty-two of the foremost aviators of the United States have already made application for entry, despite the fact that no notices have been sent out from the National headquarters, (the Committee preferring to work out the details of the organization before doing so) and as there are 200 licensed aviators in this country who either own their aeroplanes or can secure machines in time to enter the Competition on July 4th, it is expected that at least 75 aviators and constructors will participate. Mr. Martin adds that this matter will be taken up at the next meeting of the Chamber of Commerce of Los Angeles, May 1st.

Mr. Cortlandt F. Bishop, Vice-President of the Aero Club of America and the official representative of the Club at the Panama-Pacific Exposition, telegraphed from San Francisco that there is under consideration the matter of offering \$25,000 in prizes. The details are withheld from publication for the time being.

The Contest Committee is receiving hundreds of letters from Mayors of Cities, Chambers of Commerce and other organizations of cities in every part of the country—all wishing to participate in the Competition, and letters are being received from the Governors of States assuring the Contest Committee of hearty co-operation.

An illustration of the range of interest:

Mr. Henry H. Kohn, Manager of the Phoenix Mutual Life Insurance Company, of 66 State Street, Albany, New York, writes that the business men of Albany would like to have aviation events for July 4th, and are willing to offer substantial prizes therefor.

Mr. William A. Searle, Secretary of the Chamber of Commerce of Rome, New York, writes that the City of Rome is willing to offer the necessary prizes to secure an aerial demonstration for the city.

Mr. Laurence L. Driggs, of the O Ranch, Clarendon, Texas, and a member of the Aero Club of America advises that about thirty towns in Texas, Oklahoma and New Mexico especially desire a thorough demonstration of aeroplane mail-carrying and are willing to offer substantial prizes for that purpose.

Mr. A. J. Breitenstein, Secretary of the Great Falls Commercial Club, Great Falls, Montana, writes that his city is very well pleased with the plan, and will offer the necessary prizes to induce aviators to fly to Great Falls.

Even the little city of Grinnell, Iowa, with only 5,000 population, is willing to offer the necessary prizes to induce aviators to land there. In addition, Mr. W. L. Weaver, of that city has offered the use of a large landing place and hangars for aeroplanes.

The letters from various Governors replying to the request of the Contest Committee that they ask the leading newspapers of each state to start subscriptions for a fund with which to acquire two aeroplanes, to be entered in the National Aeroplane Competition first and to be used later as a nucleus for the foundation of aviation corps of the National Guard and Naval Militia, are all encouraging. The Governor of Wisconsin, the Hon. Emanuel L. Philipp, writes as follows:

Mr. Alan R. Hawley,  
New York City.

Dear Sir:

I have received your letter of April 20th relative to the National Aeroplane Competition.

This interests me as a movement worthy of encouragement. It attracts my attention primarily in connection with the Militia of Wisconsin. However, I find upon inquiry from the Adjutant General that there is probably not an aviator in Wisconsin—certainly not a Military aviator.

Notwithstanding these drawbacks, I think that the proposal in general is worth serious attention and hope that the Competition of 100 days, starting July 4th, may arouse nation-wide interest. At present I can only say that I shall bring your communication to the attention of the newspapers.

Governor David T. Walsh of Massachusetts replied as follows:

Dear Mr. Hawley:

Although I am not at all well posted on the subject, I am very much interested in the National Aeroplane Competition, outlined in your letter of April 20th, and after noting the name of a prominent Boston man on one of the committees, I am to-day writing to Mr. Charles J. Glidden to ask for his advice on the subject. Please accept my thanks for calling my attention to it.

Sincerely yours,

(Signed) DAVID T. WALSH.

Mr. Glidden, who has been closely connected with automobile touring in this country is most enthusiastic regarding the Competition, and immediately wired to the Contest Committee for the necessary arrangements to be made for entering an aviator to officially represent the State of Massachusetts in the Competition.

Mr. John M. Satterfield, President of the Aero Club of Buffalo, Alfred R. Shrigley, secretary of the Aero Club of New England, Joseph A. Steinmetz, President of the Aero Club of Pennsylvania, are developing plans to have their respective communities participate in the Competition and expect to raise sums between \$5,000 and \$10,000 each.

Detailed plans of the Competition are to be published in *Flying*, the organ of the Aero Club of America, for May, which is issued on May 1st, and may be secured by application at 297 Madison Avenue, New York.

(Tentative Schedule of Other Prizes Published in *Aerial Age* April 26th)



# The New Maximilian Schmitt Military Tractor

By Walter H. Phipps



Schmitt Biplane

JUDGING from the pleasing designs of the latest Maximilian Schmitt Military Tractor Biplane, the new machine should prove one of the most successful types in this country. While retaining the most important characteristics of the wonderfully speedy little Schmitt monocoque monoplanes, the design has been altered with a view to even still better increasing the efficiency while at the same time affording better accommodation for pilot and passenger.

In this respect the former short fuselage cockpit has been lengthened to extend clear to the tail and deepened to permit of the lower wings attaching direct to it. The over-all dimensions of the machine have however not been altered much so that the new type still retains the compactness which no doubt aided so greatly in permitting the high speed of the former models.

## General

Being designed primarily for military purposes, special attention has been paid to cutting down head resistance and securing the maximum speed range with weight carrying ability.

## Planes

The planes are built up doubled surfaced with the ribs spaced quite close together. They are built in four sections having joints only in the center. The wing curve is original and designed to carry big loads with a maximum of speed range. All the wood used is the finest clear grained silver spruce and ash, the beams, ribs, etc., being of the lightest sections possible, consistent with the strength required. They are internally braced with diagonals and cross wires which do away with the necessity of fitting drift wires.

## Fuselage

The fuselage is constructed partly rectangular and partly monocoque construction. It is quite deep in front so as to permit of the direct attachment of the lower planes.

## Running Gear

The running gear on the Rotary Engine Model is of the two-skid, two-wheel type which, however, can be replaced with a modified Morane type as designed for the vertical engine model.

In each case the wheels are mounted on a single transverse axle which in turn is strapped in place by rubber shock absorbers. This arrangement, which is rapidly finding favor with present day constructors, affords an extremely simple and efficient landing gear which has been found to absorb landing shocks quite as well as the most complicated devices which have been specially designed for this purpose. The running gear struts are given a streamline section.

## Power Plant

The power plant which may consist of either an air-cooled rotary or stationary water-cooled motor is mounted in the extreme nose of the fuselage and in either case is stream-lined off to give the least possible resistance. Large service tanks are mounted just in back of the motor and a pressure operated storage tank carried under the passenger seat.

## Controls

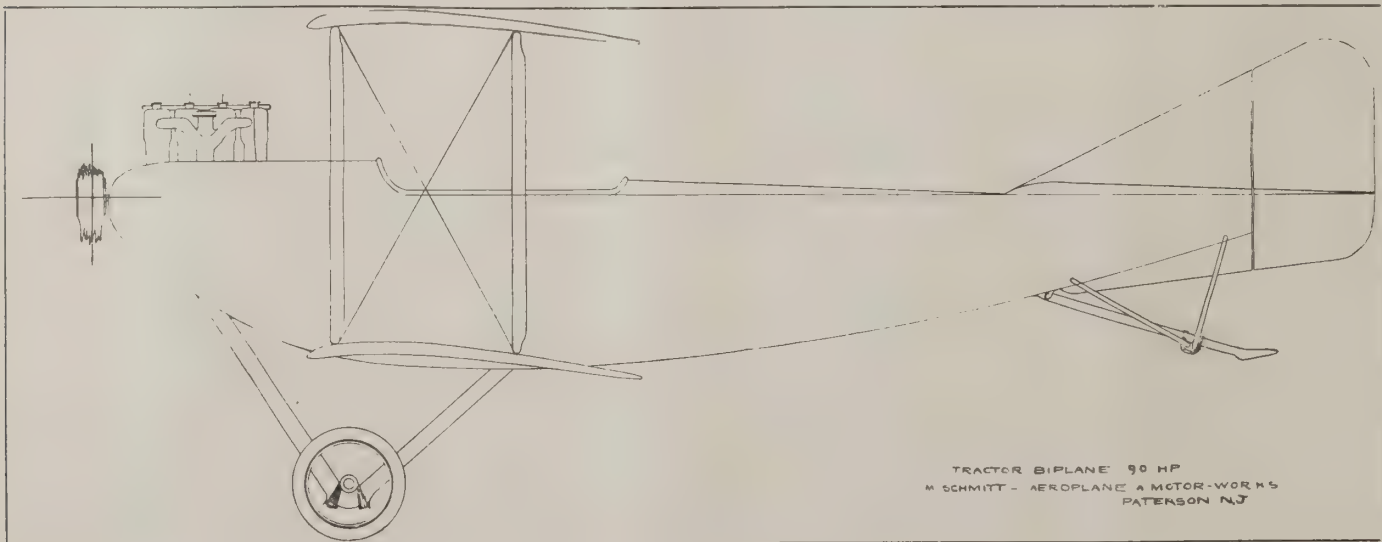
The control consists of the regulation Deperdussin type which operates by a fore and aft movement the elevators and by a turning of the wheel to the right or left the ailerons. The rudder is operated by a pivoted foot bar.

## Fittings

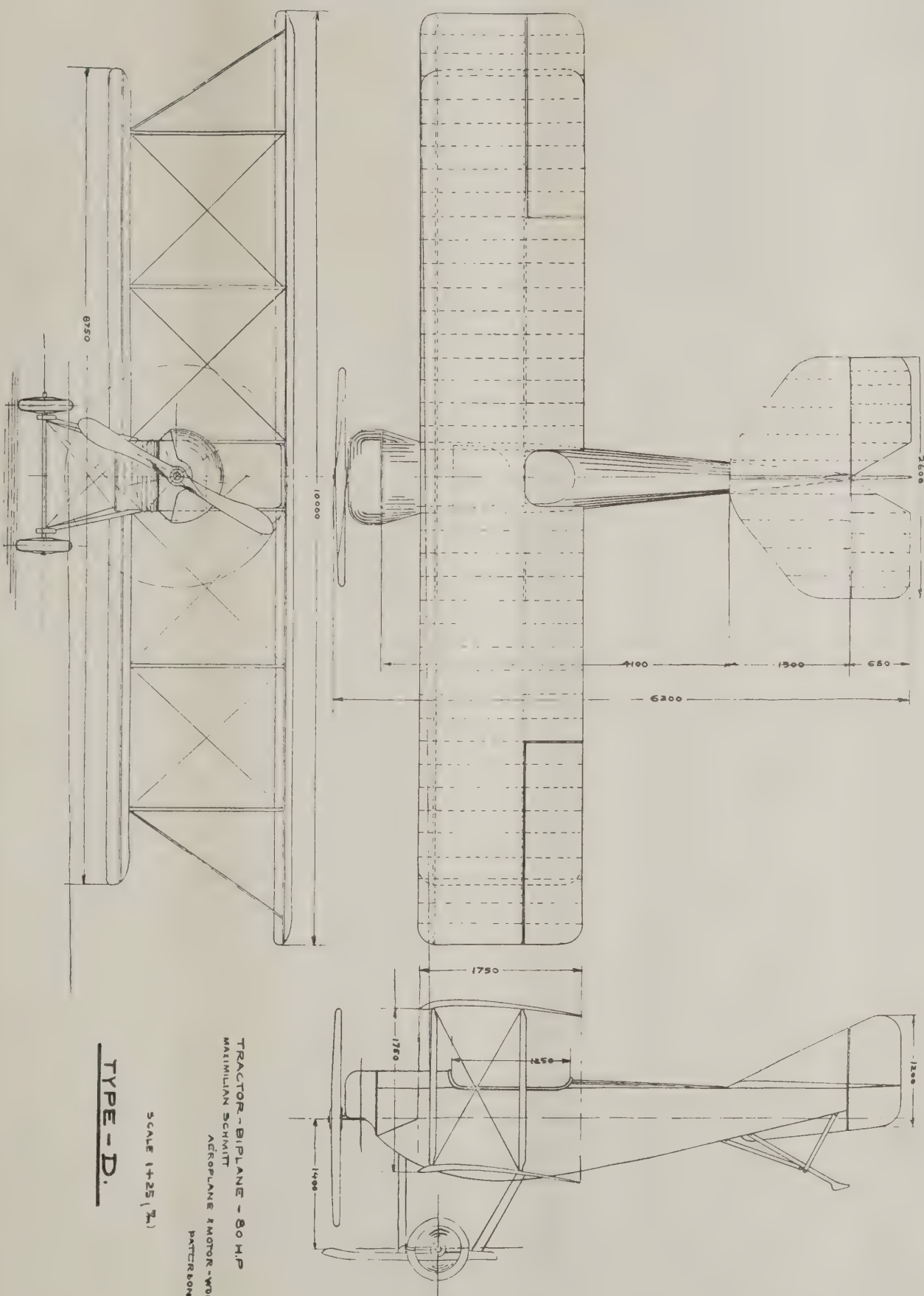
All the fittings are specially designed with a view to affording the greatest strength with the least possible head resistance. All wires are doubled at points where the greatest strains occur and of such size and strength as to afford a very large factor of safety.

## Dimensions

Span top—	32 feet	Length over all	20'-16"
Span bottom—	28 feet	Lateral control	ailerons
Chord—	5'-0"	Propeller	8'-6" diam.
Gap 1	5'-6"	Motor	Gnome
Area	3 1-10 sq. ft.	H. P.	80 h. p.



TRACTOR BIPLANE 90 HP  
M SCHMITT - AEROPLANE & MOTOR-WORKS  
PATERNON N.J



TRACTOR-BIPLANE - 80 H.P.  
MAXIMILIAN SCHMITT  
AÉROPLANE MOTOR-WORKS  
PATTE D'OIE, J.

SCALE 1:25 (7/8")

**TYPE - D.**



# Foreign News

Reported by L. d'Orcy and Robert Pluym

## France

Roland Garros, who holds a commission as a lieutenant in the French Aviation Corps was taken prisoner by the Germans on April 18, while he was carrying out a reconnaissance near Courtrai. His engine broke down and he had to alight at Ingelminster, Belgium, where he was captured by a German patrol.

Lieutenant Garros is well known in the United States, having flown in many competitions in this country under the management of the Moisant International Aviators, who employed at that time three other crack flyers who have since achieved fame, namely, René Barrier, René Simon and Edmond Audemars. Garros toured with his companions the United States and Mexico in 1910 and 1911 and gave exhibitions in Richmond, Chattanooga, Memphis, New Orleans, Dallas, Fort Worth, Oklahoma City, Waco, Houston, San Antonio, El Paso, Mexico City, Vera Cruz, Havana and New York.

His greatest achievements Garros accomplished however in Europe. He first came to the fore when in 1911 he participated in the Paris-Rome, Paris-Madrid races and in the European Circuit. Ill-luck seemed to pursue him at that time for in every one of those competitions he arrived second, which made people give him the nick name the "Eternal Second." The following year Garros took, however, his revenge and won the Grand Prize of the Aero Club of France, when he alone started in a gale that bent the trees and which none of the other entrants dared to defy.

Besides participating in races, Garros has specialized in altitude flying and subsequently established three world's altitude records with 11,628 ft., 16,258 ft. and the last one of 18,368 ft. on Dec. 17, 1912.

But his greatest achievement, one that would suffice to secure him imperishable fame in the golden book of human flight, was his over-water flight in a land-going aeroplane from St. Raphael, France to Bizerte, French Africa on July 27, 1913, a flight that took him across the Mediterranean over a distance of 550 miles in 7 hours, 53 minutes. Since the beginning of the war Garros has been among the most intrepid and daring of the French military aviators. One of his latest exploits was at Dunkirk, when he shot down in the air the aviator and the observer of a German aeroplane. He went out against this machine alone, and as his machine was the faster, he was able to gain an advantageous position, from which he fired with fatal precision.

Garros was born of French parents at Capetown, South Africa, in 1885. He is a graduate of the University of Paris and of its Law School, and for a time practiced his profession in the French capital.

Jean Biélovucic, the well-known Peruvian aviator who was the first to cross successfully the Alps and now holds a commission as a lieutenant in the French Aviation Corps, was rather seriously injured some time ago when his automobile collided with a convoy wagon. He suffered a dislocation of the shoulder and of one arm, but is now on the way of recovery.

Georges Carpentier, middle weight champion of the world, who held a commission in the Aviation Corps as a motor car driver, has obtained the permission to join the military aviation school at Avord.

Unfortunately the death of the following airmen is confirmed: *Marc Pourpe*, the "colonial flyer," Capt. *Saerac de Forge*, well known as a writer on aeronautical subjects and inventor of the improved type of air darts; Dr. *Emile Raymond*, Senator, the untiring president of the French Aerial League; *Rugere* (alias Paul Guerre) and *Augustin Laporte* both old timers, well known for their constant association with the Voisin firm; *Marcel Granel*, who took part in the Balkan wars on the Turkish side, having been for long time a REP flyer; and *Jean Montmain*, a well known looper.

## Germany

Two Allies' aeroplanes, believed to have been French are reported as having shelled with bombs and set afire some military barracks at Hamburg on April 13. No confirmation of this report has been forthcoming from official sources.

Count Zeppelin's secretary has made the following statement to a representative of the *Constance Nachrichten*:

"Our air fleet now comprises 1,366 units, of which 36 are dirigibles. We have had far heavier losses than anticipated, nine dirigibles being put out of action since the beginning of the war, but the destroyer units have been replaced by new types, armed with long-range cannon and mitrailleuses.

"By July 15 we are to deliver fifteen airships of a greatly perfected type, each being armored and capable of carrying two tons of explosive. With these we

shall be able to undertake safely London expeditions in the thickest fogs and on the blackest nights.

"We have just completed trials of a system for increasing the elevating speed of our dirigibles, which will enable them to attain an altitude two-fifths better than the best hitherto possible. We contemplate an excursion to London, not simply a reconnaissance, like our recent Paris success, but a veritable war expedition.

"We shall attack London with two squadrons of five dirigibles, regardless of possible losses, but we don't expect to undertake this great aerial attack until all the new units are ready. That will be about August, when the great offensive ordered by the Kaiser takes place.

"We shall employ a new process causing atmospheric perturbations, which will make it impossible for enemy machines to cross the German lines without gndropi like flies."

Another report from Switzerland states that Count Zeppelin is not satisfied with the manner in which his airships are being handled. He called together some time ago his engineers and the captains of the dirigibles at the Zeppelin works at Friedrichshafen and criticised them on several scores.

The Count said that the full power of Zeppelins had not been employed and that longer raids than any made heretofore were possible. He also said that there was too much of a disposition to await favorable weather conditions, instead of responding without delay to military requirements. He believed that an attack upon London and the lower Thames had been delayed unnecessarily.

The Rhine from Basle to Mulhouse was the scene of an aerial engagement on April 20. The action lasted from 5 until 7 o'clock and was witnessed by gatherings of people at many points of vantage.

Four aeroplanes of the Allies, two British and two French, moved out from French territory to attack a group of German machines. Numerically the Germans were stronger, and as the aircraft of the Allies were subjected to a bombardment from Fort Istein, they retired. Later they returned with reinforcements. Outnumbering the Germans, they drove them away.

Later, at half past 9 o'clock, two Zeppelin airships, accompanied by several aeroplanes, appeared in the vicinity of Huningen, on the left bank of the Rhine, two miles from Basle. Their coming was followed by firing for two hours.

According to the *Telegraaf's* Ghent correspondent, airmen recently appeared above Gontrodd, east of Ghent, and were at once heavily bombarded. Apparently in order to deceive the Germans the airmen employed a ruse, one aviator allowing his machine to fall quickly upside down. The Germans ceased firing, believing that the aviator had been hit, but he suddenly resumed his upright position, dropped two bombs, and disappeared.

Several air sheds were damaged, and similar visits were repeatedly paid by the Allies' aviators to the air sheds at Gits, Lisseweghe, Gisteltes, and Gontrode.

## Mexico

The Bleriot monoplane recently purchased in the United States by the Carranza faction was exported to Matamoros and after it was set up a trial flight over the city was made by a one-time Italian army aviator, Colonel P. A. Chapa. He did not venture over the lines of the Villa soldiers, but circled around the city and landed safely in the plot which had been constructed near the border for his machine.

"Jack" Knight, an American from El Paso, and Juan F. Garcia, of Ciudad Juarez, have arrived at the Villista camp from El Paso to take charge of the Wright biplane which General Rodriguez will use in scouting the Carranza positions.

Three other aviators, all Americans, are on the way to join the Villa corps. The Villa aeroplane has been equipped with a bomb dropping device, and in addition to the scouting expedition it will attempt to destroy the fortifications in the city of Matamoros.

The Carranza aviator, Colonel Chapa, announced that he had two thousand bombs that he intended to drop within the Villa lines.

## Montenegro

Austrian aeroplanes on April 6, bombarded the Montenegrin town of Podgoritz. A celebration was in progress and the streets were crowded. Twelve persons were killed and sixty wounded and many houses were destroyed.

## Russia

On April 6, a German hydroaeroplane bombarded the Russian port of Libau on the Baltic. It was shot down and the aviator and observer were both made prisoners.



Courtesy of Flying

A Belgian *De Broukère* (Farman license) biplane armed with a Lewis aeroplane gun. This gun is the invention of Col. Isaac N. Lewis, U. S. A., and is widely used on Belgian, British and Russian fighting aeroplanes.



# MODEL NEWS

BY WALTER H. PHIPPS

## CLUBS

**THE AERO SCIENCE CLUB OF AMERICA**  
29 West 39th Street, New York City

**PHILADELPHIA MODEL AERO CLUB**  
2208 Brown Street, Philadelphia, Pa.

**PACIFIC NORTHWEST MODEL AERO CLUB**  
915 Ravenna Boulevard, Seattle, Wash.

**LONG ISLAND MODEL AERO CLUB**  
401 Grant Ave., Cypress Hills, L. I.

**BAY RIDGE MODEL CLUB**  
6730 Ridge Boulevard, Bay Ridge, Brooklyn

**CONCORD MODEL AERO CLUB**  
Concord, Mass.

**SUMMIT MODEL AERO CLUB**  
26 Shady Side Ave., Summit, N. J.

**THE ILLINOIS MODEL AERO CLUB**  
Room 130, Auditorium Hotel, Chicago, Ill.

**MILWAUKEE MODEL AERO CLUB**  
402 Bradford Ave., Milwaukee, Wisc.

**CONCORD MODEL CLUB**  
c/o Edward P. Warner, Concord, Mass.

**AERO CLUB OF ST. LOUIS**  
Columbia Bldg., 8th & Locust Sts., St. Louis, Mo.

**MODEL AERO CLUB OF OXFORD**  
Oxford, Pa.

### Illinois Model Aero Club

By Arthur E. Nealy

AT THE last Friday night meeting it was voted to hold one special scientific meeting each month, as the regular meetings were occupied entirely with club business.

It was also decided that the scientific papers and experiments brought to each of these meetings should be stenciled, copies turned out and attractively bound and sold to the members of the Club at 10c. per copy. This will enable the members to gradually build up an interesting library of model aeronautics.

At this meeting Mr. Ellis Cook gave some interesting data on experiments with rubber lubricants. The six badges for the last two meets were awarded.

### Aero Science Club Bulletin

By George A. Cavanagh

THE Aero Science Club meeting of April 24th, proved to be of special interest. Many members were present and four names were proposed for membership. Considering this and the fact that many inquiries have been received it appears that the Aero Science Club is about to enter upon a very successful year.

On April 18th, the A. S. C., held a speed contest at the Van Cortlandt Park Flying Field, but due to reasons stated in Bulletin No. 5, the contest turned out to be unsatisfactory and for that reason has been voted by the Club to be run off again on May 2nd, but this time at the Rugby Flying Field, Church Avenue and Ninety-Sixth Street, Brooklyn, N. Y., which field offers better prospects for a successful contest of this class. The contest will be reheld under the same rules as those of the previous one, and Messrs. Durant and McLoughlin will again act as timer and starter respectively. No doubt the result will warrant the satisfaction of all interested. All those who participated in the con-

test of April 18th, are expected to appear, in addition to many others.

Regarding the partially completed aeroplane which was donated to the Club through the kindness of Messrs. Vincent Burnelli and Armour Selly, a Committee was appointed to draw up specifications with a view toward remodeling the machine into a first-class glider. The Committee will report at an early meeting regarding their investigation and present plans for a glider to be approved.

Mr. Edward Durant, Director of the Club has been designated to try and obtain for the Club the privilege of flying on the new aviation field at the Old Sheepshead Race Track at lower Brooklyn, N. Y., which field is now undergoing preparation for a motordrome and aerodrome. If Mr. Durant succeeds in so arranging that the Club can utilize this field for the holding of its future contests, the Club will be gratified to those in authority, as this field offers one of the finest flying spaces in the near vicinity of New York City and will prove to the convenience of many of its members who now experience difficulty and many hours of travelling in order to participate in contests.

At various meetings in the past, discussions have taken place from which it was apparent that many of the members of the A. S. C., and even non-members were becoming more desirous of having Scientific Contests more frequently than heretofore. Many good reasons have been offered by the members upholding their views in this respect. A large percentage of those whose thoughts lean in this direction have flown models of the V-shape design for as long as five years and some eight years and all have come to the conclusion that if assistance by the model builders and flyers is to be rendered to the ever developing industry of aeronautics, a model of more scientific value must be adopted; one which can be of value in proving the practicability of new inventions and further, can itself be developed into a large passenger-carrying machine from the plans and specifications if the inventor so desires.

(Continued on Page 164)



The Pierce Glider at Rest. Some Very Interesting Flights Have Been Made in this by the Boys of the Philadelphia Aero Club



The Pierce Glider in Towed Flight. A Rather Steep Take-Off Which is Being Corrected by the Use of Controls





Aeronitis is a pleasant, a decidedly infectious ailment, which makes its victims "flighty," mentally and physically. At times it has a pathologic, at times merely a psychologic foundation. It already has effected thousands; it will get the rest of the world in time. Its symptoms vary in each case and each victim has a different story to tell. When you finish this column **you** may be infected, and may have a story all of your own. If so, your contribution will be welcomed by your fellow **aeronuts**. Initials of contributor will be printed when requested.

### The Flying Burglar

We take pleasure in welcoming to this special repository of flighty remarks the writer of the following, which has appeared as the leading editorial of the Quincy, Mass., *Ledger*. Aeronitis got him. This case is an advanced one:

### The Flying Burglar

The most advanced inventions of science are not always unmitigated blessings. The aeroplane is one of science's most wonderful creations and yet we may well question whether it has conferred any real benefit upon the human race.

One of the state's most difficult and most important tasks is the preservation of order among its inhabitants. Every state has a police force of some sort to protect the law abiding members of the community from those who are not law abiding. Will the aeroplane as it continues to develop reach a point where it will render more difficult the state's protection of its inhabitants. Bearing in mind what the aeroplane is credited with having accomplished in the Great War is it fanciful to conceive of the up-to-date burglar equipped with a powerful aeroplane which will enable him to fly through the night to the second story window of some respectable citizen, whom he may rob, and then

before day breaks fly unseen to a point hundreds of miles away? Maybe it is fanciful. Five years ago it would have seemed fanciful to imagine an aeroplane flying over the English channel and hurling bombs upon a great city. And yet we are told that all lights are extinguished in London in the night time of the present era.

### Aeronitis Notes

By A. C. Beech

As a matter of speculation we had once advanced the theory that the diversity of aptitude for flight shown by different men might be explained biologically by a like diversity of our remote ancestors. A few days afterward the bottom of our boat was torn out by a submerged obstacle and we sustained a thorough ducking. As we were being assisted to a boat a voice called out: "Say, Beech, your remote ancestors must have been flying fish."

Many a man who to-day shrinks from getting into a flying boat would have had to be chloriformed to get him into an automobile 15 years ago.

The preacher in Savannah, who, from the pulpit, reproved a British Consul's daughter for indulging in "the frivolous sport of aeroplaning while her country was fighting for its existence," should seek a position as press agent for a carnival company, his publicity methods are wasted,—perhaps.

Many a man takes a flight for the same reason the same type takes a cold bath,—to brag about it for the rest of his life.

When a man tells his wife he loves her too much to permit her to gratify a wish to fly he doesn't always deceive her. And by the same token he can't get the convincing inflection into his tones when he says those who like to fly are crazy.

We were recently trimmed, trimmed to the hide by a new process. A man who splashes H. C. Foss over the literature and correspondence of a Stone and Webster concern in Savannah, Ga., refused to write a contract for a percentage of excess receipts on the grounds that he did not think a flying-boat would "draw," etc., etc. He suggested a gentleman's agreement by which we were to get a sum measured by the excess receipts which might accrue to the traction company from our efforts. We had made gentleman's agreements before with traction companies with great success. The man looked like a gentleman,—that is, he had the same number of feet, so we accepted.

The company has since had fourteen days when all local traffic receipt records were estimated to have been broken and has profited to the extent of several thousand dollars.

The man with the same number of feet as a gentleman has since repudiated his agreement, so we shall require other qualifications than numerically similar pedal extremities when another gentleman's agreement is under consideration.

If it were not for a certain amount of dirty work to be done in all corporations,—even the clean ones, many a man now holding a good position would have to follow his inclinations into the domain of the sandbag.

Reported from the Fleatown Counter:—

"An aviator hit Hiram Hardly's barn with his airyplane yesterday morning. Hiram says it will only cost \$2.14 to fix it again and the cow that was scared is now giving its regular 8 qts. daily."



"IS THIS THE EARTH?"

"NOPE. SHE'S THE THIRD PLANET TO YOUR LEFT."

Courtesy of Life

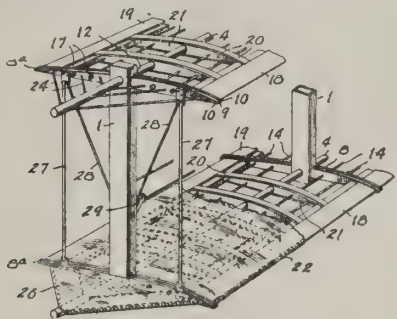


# RECENT AERO PATENTS

BY WILLIAM N. MOORE

1,132,686. AEROPLANE CONSTRUCTION. James Rooney, Washington, D. C. Filed Dec. 4, 1914. Serial No. 875,501. (Cl. 244—31.)

1. An aeroplane construction including a frame, cross bars mounted thereon, a series of tension wires connecting the cross bars, edge pieces interposed between the cross bars and bearing loosely at their ends against the cross bars so as to offer no resistance to the warping of the plane, transverse truss members connecting the edge pieces, and a fabric covering applied to the edge pieces and truss members.



1,133,342. FLOAT FOR HYDROAEROPLANES. Oskar Ursinus, Frankfort-on-the-Main, Germany. Filed Mar. 5, 1914. Serial No. 822,618. (Cl. 244—2.)

1. A hydroaeroplane float comprising upper and lower planes and a wedge shaped body portion positioned between said planes, the front end of said lower plane being curved upwardly, the sides of said body portion diverging from the front of the float toward the rear thereof.

2. A hydroaeroplane float comprising upper and lower planes and a wedge shaped body portion positioned between said planes, the front end of said lower plane being curved upwardly, the sides of said body portion diverging from the front of the float toward the rear thereof, the sides of said body portion being channelled.

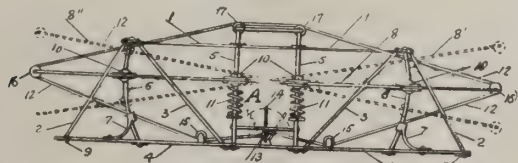
3. A hydroaeroplane float comprising a lower plane having its front end curved upwardly, an upper plane having its front end pointed and a wedge shaped body portion positioned between said planes and having sides diverging from the front of the float to the rear thereof, said sides being channelled.



1,133,643. FLYING-MACHINE. James W. Headly, Omaha, Nebr., assignor of one-half to Oliver A. Moore, Omaha, Nebr. Filed Nov. 9, 1914. Serial No. 871,051. (Cl. 244—29.)

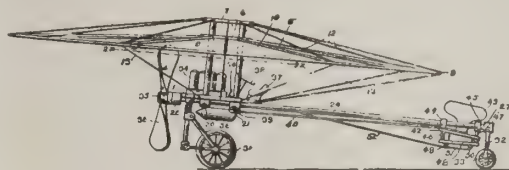
1. In a flying machine, an elongated upper horizontal frame, an elongated lower frame, a plurality of vertical posts disposed at longitudinal intervals parallel with the longitudinal axes and connected with the frames, an air-plane provided with apertures, ball-casings mounted in said apertures, each ball casing being provided with opposed slots disposed parallel with and opening outwardly of the sides of the air-plane, said air-plane being disposed intermediate the upper and lower frames with the slots of its ball-casings traversed by said posts, means for moving the air-plane to a position parallel with said frames, and means for disposing said plane inclinedly with reference to said frames, the ball-casings moving vertically and transversely of said posts.

2. In a flying machine, an upper and lower framework whose horizontal members are vertically connected by supports which form guides to sustain a movable plane, the outer supports being so formed and shaped that they are part of the circumference of a circle, means to connect the movable plane to engage with the segmental supports and enable the plane to be inclined at either end from a common center.



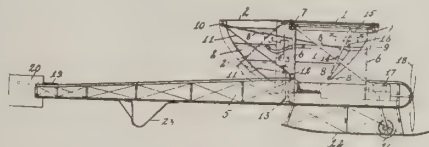
1,133,707. FLYING-MACHINE. Joseph F. Claesgens and Frederick A. Geiger, Rochester, N. Y. Filed May 9, 1914. Serial No. 837,573. (Cl. 244—14.)

1. In a flying machine, the combination of an aeroplane, an upright frame for supporting said plane, a ring at the bottom of said plane, a plurality of perforated lugs integral with said ring, a horizontal frame having a pair of bars therein passing through the perforations in said lugs and making a sliding engagement with said vertical frame.



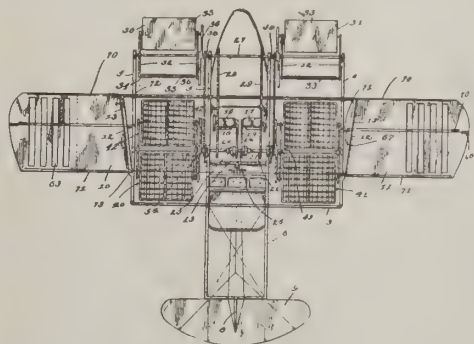
1,133,757. AEROPLANE. Russell R. Smith, Rodeo, Cal. Filed May 9, 1914. Serial No. 837,452. (Cl. 244—27.)

1. In an aeroplane, the combination of upwardly converging main planes; stabilizing planes hingedly connected with the rear edges of the main planes, and adapted to be drawn down to an angle with the main planes, said stabilizing planes being fashioned and disposed relatively to the main planes to form a parachute therewith when drawn down in unison; a car pendulously suspended from the apex of the main planes; lines connecting the stabilizing planes with opposite sides of the car for automatically operating said planes as ailerons; and means under the control of the operator for simultaneously drawing down the stabilizing planes to form a parachute with the main planes.



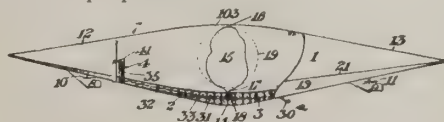
1,133,984. FLYING-MACHINE. Welman B. McCarley, Columbus, Ohio. Filed Nov. 26, 1913. Serial No. 803,278. (Cl. 244—16.)

1. A flying machine including a main frame, a supporting surface carried thereby, rotary lifting and propelling wings arranged in advance of said supporting surface and on opposite sides of the longitudinal center of the machine, correspondingly arranged rotary lifting and sustaining wings disposed beneath the main plane and in rear of the first-named wings, each of said wings embodying blades adjustable to different working angles, controlling connections for adjusting said blades, and drive gearing for simultaneously actuating said wings.



1,134,386. BALLOON AND ANALOGOUS DEVICE. Peter Cooper Hewitt, Ringwood Manor, N. J. Filed Apr. 21, 1908. Serial No. 428,302. (Cl. 244—6.)

1. A motor balloon comprising an elongated envelop, in combination with a load supporting truss located close to the envelop, propellers located at equal distances from, and on opposite sides of, the envelop and between the horizontal plane of the load and the plane of the center of resistance, means for balancing the operative effect of said propellers and two similar deflecting surfaces of substantially equal areas located one forward and the other aft in such relation, as to exert equal and opposite deflecting efforts for the purpose described.





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ALL AERONAUTICAL EQUIPMENT OF  
THE LATE LINCOLN BEACHEY

*Consisting of*

**80 Horse Power Monosoupape Gnome Motor**, with extra parts and tools for same. Weight, 198 pounds. In perfect running order. Set up ready for demonstration.

**Loop-the-loop Biplane** in which motor was used, complete with spare parts and packing cases.

**One Martin Tractor Biplane.** Complete set of parts for assembling Monoplane.

Motor fell in clear water and immediately on being taken out was taken apart, cleaned, oiled, reassembled, placed in the center section of the Biplane, given a twenty-minute run, and runs as perfect as ever. Demonstrations at all times.

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NEW YORK

### Aero Science Club Bulletin

(Continued from Page 161)

Some models of the present-day type have proven their incapability in this respect. However, the present day models are not to be considered valueless, as many of those who are to-day interested in aeronautics have through the use of them learned the fundamental principles of aviation, and in addition have spent many pleasant days in flying them. But the fact remains, should one attempt to develop a large machine from the plans of one of these machines he would find himself somewhat hampered when taking into consideration the technical points of importance; and as the relationship of these models to the larger machines is so out of proportion the inventor would no doubt be stopped if he attempted to incorporate any of the features of the more successful machines.

The Aero Science Club has carefully considered these facts and now comes to the conclusion that models of scientific value should be developed and the builders encouraged. A number of members of the A. S. C., are now working on this type of model. Among the foremost are Messrs. Frank Schoeber and Rudolph Funk both of whom have given very interesting lectures on their model motors which worked remarkably well and expected to bring forth shortly, large model flying machines using their model motors as power plants.

In view of the increasing desire on the part of the model flyers to build models along these lines, the A. S. C., at the last meeting voted in favor of holding the first scientific contest of this year on July 4th; the day upon which the big National Aeroplane Competition commences. This space of time will enable all to build and try out their models in order that they may be properly prepared to qualify and participate. A Committee has been appointed to draw up rules and regulations to govern this contest which committee will convene early on Saturday, May 1st. These rules will appear in an early bulletin. The total of contributions received from members and non-members by July 4th, will be converted into three prizes, all of which will be awarded in gold and in the following percentages. First Prize, 50%; Second Prize, 30% and Fourth Prize, 20%. At the last meeting a number of contributions were received.

This contest will be known as the

#### AERO SCIENCE CLUB EFFICIENCY CONTEST

As this is probably the first scientific model contest of importance to be held in this country, many interesting types of machines are expected to be entered. For information concerning the Aero Science Club or the above contest, address the Secretary, George A. Cavanagh, No. 49 Lott Ave., Woodhaven, Long Island.

### *The Aviator*

*By Rufus J. Childress.*

This poem was the first unsolicited contribution received by *Aerial Age*.

Oh! the air! The ambient air!  
Vast and bounteous realm  
For winged dwellers, free from care;  
But mankind who would tempt or dare,  
So prone to overwhelm!

The air, the air mildly a-blow,  
Shunned by navigators,  
Is now invaded, high and low,  
In every land as people know,  
By aviators! Aviators!

See the airships, how they sail?  
How they circle round in rings?  
Dive down or up o'er hill or dale,  
With fleetier speeds than any gale,  
On wide, expansive wings!

At last Man conquers the airy realm!  
He plows the ethery world  
O'er clouds that no more overwhelm,  
A roadway marks with clotch and helm  
And mammoth wings unfurled!

O daring Aviator, if I ask  
A favor, calling loud,  
Wilt thou heed? Light is the task,  
Arouse thyself, thine eyes unmask,  
Behold yon luminous cloud!

A fairy dwelling-place, it seems;  
Sail thou beside it or above,  
Search through the effulgent gleams,  
Kidnap the Peri while she dreams,  
Fetch her to be my love!

Advertising  
in this department  
10c. a word  
\$2.50 minimum

## Classified Advertising

Forms close for this de-  
partment on Monday  
preceding date of issue

**Wanted**—Draftsmen with ten years' experience and skilled in the design and layout of aeroplanes.

Address, Aerial Age, Box 3  
116 West 32nd Street, New York City

### Manager Wanted

for aviator planning long distance flight. Must be experienced in securing exhibition dates.

Address, Aerial Age, Box 7  
116 West 32nd Street, New York City

### Wanted

Woodworkers, sheet-metal workers and assemblers with aeroplane experience.

Thomas Bros. Aeroplane Co.  
Ithaca, N. Y.

### Draughtsman

Experienced designer on up-to-date Flying machines, speaking German, French, English, wishes position. Neat accurate worker. Calculations.

Address, Aerial Age, Box 4  
116 West 32nd Street, New York City

### FOR SALE

#### 220 H. P. ANZANI MOTOR

Address Box No. 9, "Flying," 120 West 32d Street, New York City.

### FOR SALE—CURTISS AEROPLANE

Best offer over \$500.00 takes my Curtiss Type Aeroplane, equipped with 50 H. P., 6 cylinder Kirkham Motor. All in good flying condition; crated for exhibition work and includes 4 extra sections and motor parts. Machin was flown by Eugene Godet, season 1913.

Address, G. W. ZEIGIN  
P. O. Box 607 Monroe, La.  
Bank Reference

### WANTED

50 H.P. Gyro or Gnome in good condition. Will pay cash for same or take in trade on new 90 H.P. Flying Boat Motor.

Address, AERIAL AGE, Box 10  
116 West 32nd St., New York

### For Sale

Genuine Curtiss flying boat with Curtiss O X for sale at the right price. Also, Maxi flying boat with 100 hp. Maximotor six.

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to insure a place at the start*

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Plan and instructions with full-sized hull lay-out, 50c. post paid. Plan and instructions alone, 35c.

Other Model Plans.—Phipps' "Avis" Tractor hydro-aeroplane, 25c., with pontoon blue prints, 35c.; "Long Island Racer," 25c.; Excelsior Tractor, 35c.; Bleriot Racer, 25c. Write now for complete 1915-1916 Instruction Book and Catalogue, 7c. post paid.

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*Send for Booklet.* Our teaching method is thorough and the most economical. Address as below

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Fills the cloth thoroughly and shrinks it moderately. It is gasoline, oil and water-proof. Can be worked smooth with sandpaper, and brought to a high gloss after three or four coats, or can be finished with any good spar varnish.

Use at least three coats, applied quickly, with a brush about two inches wide, and allow one hour for drying each coat. **Price, \$3.85 per gallon,** plus cost of cans or barrels.

THE GALLAUDET CO., Inc., Norwich, Conn.



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We use only the best materials obtainable and our workmanship is unsurpassed.

EVERY RADIATOR FULLY  
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## AERONAUTICS

Indicating and Recording  
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Ascent and Descent Indicators

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either separate or on Complete Board

## QUEEN-GRAY CO.

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## Universal Ilanasilk Life Preservers

MAKE AVIATION SAFER

*"Always Ready"*

Automatically hold the head out of water when exhausted or unconscious. Lessens the shock of a fall or bad landing. Protect against moisture and spray.

Used by  
Government Aviators

The "Universal Life Line" Life Saving Mattresses and Pillows for bunks. Motor-boat Life Preservers and Ring Buoys. Swimming Float for Swimmers and those learning to swim.

Boat and Canoe Cushions of any size or type. Made to comply with U. S. Motor-boat laws. All filled with the wonderfully buoyant "Ilanasilk."



THEY CREATED A SENSATION AT THE MOTOR BOAT SHOW

The Special Gold Medal and Exposition Gold Medal were awarded these equipments at International Exposition of American Museum of Safety, Grand Central Palace, New York, Dec. 12th to 19th, 1914.

*Write for Catalog*

**Robinson-Rodgers Co.**

(Established 1790)

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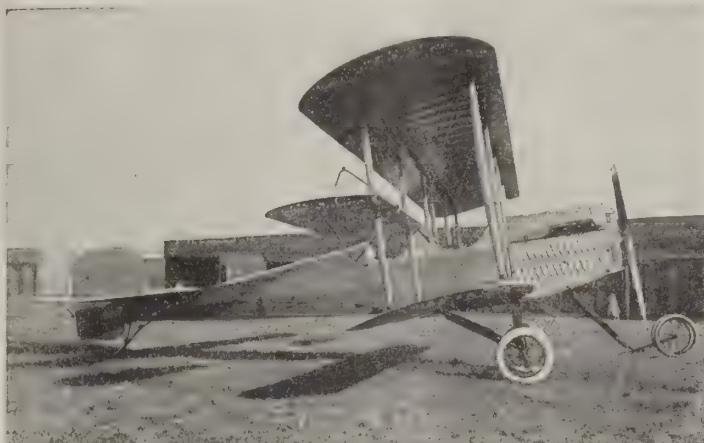
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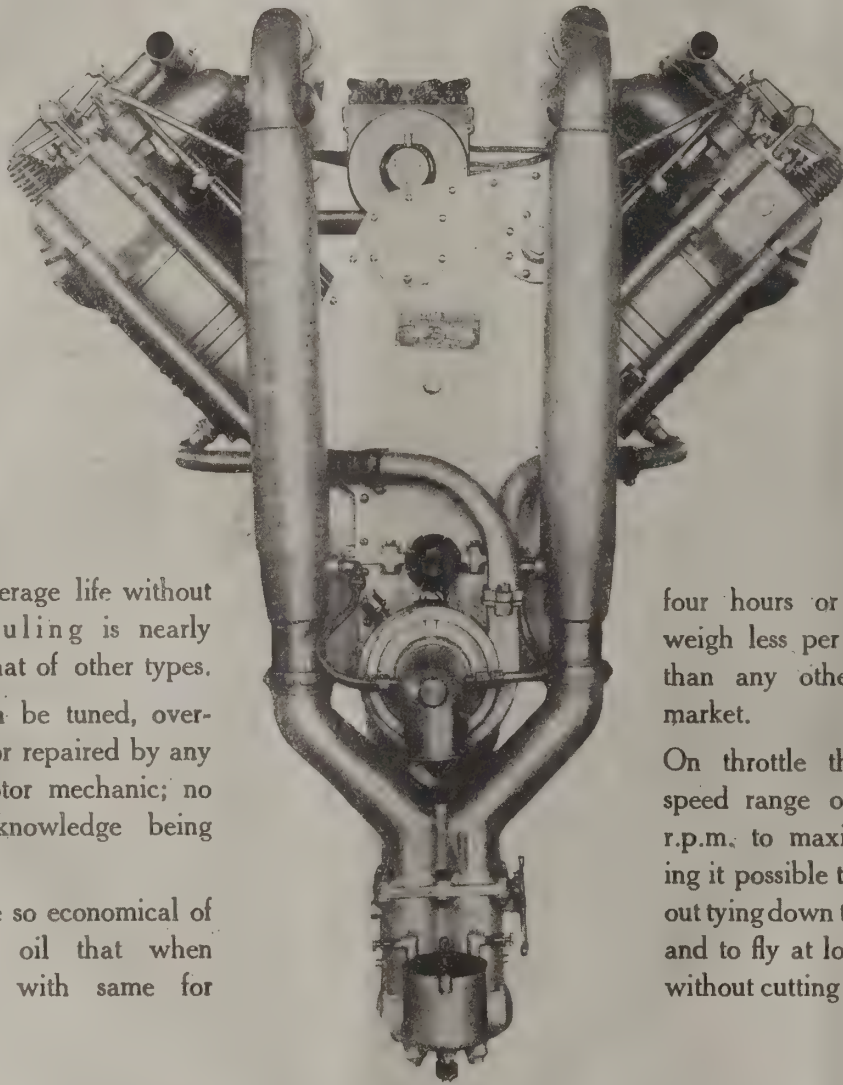
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22 MAY 1915

# AERIAL AGE

## WEEKLY

Vol. I. No. 8.

MAY 10, 1915

10 CENTS A COPY



Photo by Underwood & Underwood

**Vincent Astor Inspecting His New Burgess-Dunne Flying Boat**

*From Right to Left: Mr. Vincent Astor, The Globe Correspondent, Mr. F. H. Russell, Mr. Clifford Webster*



## A Thomas Tractor Biplane

on February 27, with 3 men and 4 hours' fuel aboard, climbed 4,000 ft. in 10 min. Average speed, 81.1 m. p. h. Slow speed, 38 m. p. h.



# Why They Chose the Thomas

Recently, several representatives of a great government visited the Thomas Plant at Ithaca, N.Y. There they saw demonstrated the Thomas Military Tractor Biplane. They examined the machine in detail.

These men endorsed this Thomas Machine and ordered 24 for their government.

These are the reasons why they chose the Thomas:

In the first place, the design of the Thomas represents the best of both European and American practice. The chief designer at the Thomas Plant has had a wide experience in aeroplane construction in Europe and America. He brought over with him the cream of European scientific finding, and is backed by America's foremost aeroplane builder.

This fortunate combination has resulted in Thomas Machines of exceptional inherent stability, quick climb and fine dependability. Thousands of flights made by Thomas Machines last year—without a hitch—without

hours of tinkering before and after—attest to the qualities of readiness and durability in the Thomas.

These qualities are made possible because the construction is as near perfect as engineering skill can make it. Every detail—every screw, bolt, ferrule, is *right*. Each machine is built under the personal supervision of the Thomas Brothers—aeronautical and mechanical engineers of wide experience.

The Thomas Plant has a large manufacturing capacity. It can turn out machines on short notice and make quick delivery.



The Thomas Brothers' Factory

## See the Thomas Military Flier

To fully appreciate the advantages of the sturdy Thomas, you should *see it*. Watch its wide range of manoeuvring—the quick starts, turns, climbs, etc.

## Visit the Thomas Plant

at Ithaca. Sit in one of the machines. See for yourself why the Thomas is so efficient, and why others, on seeing it, chose it without delay.

Before Buying See the THOMAS

# Thomas Bros. Aeroplane Co., Ithaca, N.Y.

*Bettered the requirements of U. S. Army Aviation Corps*

**CURTISS FACILITIES**

This shows one section of the new steel factory. It is 300 ft. long and 100 ft. wide. Another section of equal size is now under construction. Curtiss Aeroplanes of tractor and pusher type for land and water are built here under ideal conditions.

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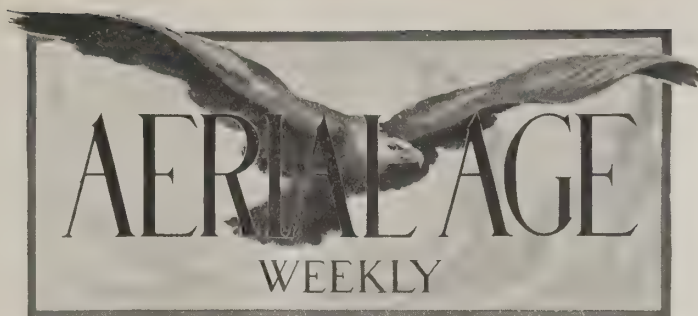
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PUBLISHED WEEKLY BY THE AERIAL AGE COMPANY, Inc., 116 West 32nd Street, New York City

Entered as Second-Class Matter March 25, 1915, at the Post Office at New York, N. Y., under the Act of March 3, 1879

VOL. I.

NEW YORK, May 10, 1915

No. 8.

## Navy Not to Manufacture Air Craft

WHEN the reports regarding the Navy's intention to manufacture air craft began to circulate in the press, Mr. Henry Woodhouse, Managing Editor of our monthly contemporary, *Flying* and contributing editor to *Aerial Age*, wrote to Secretary Josephus Daniels for a statement regarding the matter. Secretary Daniels has now replied as follows:

The Secretary of the Navy,  
Washington.  
April 27, 1915.

Dear Mr. Woodhouse:

"I thank you for the newspaper clippings which you enclosed, and for your letter of the 17th inst. The Advisory Committee on Aeronautics had not organized at the time this statement was made in the clippings you were good enough to send. This Advisory Committee, provided for as you will undoubtedly recall in the Naval Appropriations Bill upon my recommendation, has its duties and powers defined in that bill. It is the belief of the Department that its advice will be of very great value, within the limitations of its functions.

"The question of whether air craft should be manufactured by the Navy Department is not a question that would come before this Advisory Committee in any way. The position of the Department was clearly expressed in my approval of the reports of the Bureau of Construction & Repair and the Bureau of Steam Engineering, transmitted to Congress last December. I have seen no reason to change the position then taken. The sole desire of the Department is to use the money appropriated by Congress in a way that will, as rapidly as possible, make this arm of the service as effective as possible. The Director of Naval Aeronautics and the experts at the aeronautic station at Pensacola and our observers abroad are giving everything regarding the improvement of air craft in the Navy their earnest attention and consideration.

"We are much gratified in the assurance we have received from designers and constructors that they will give us a suitable type of air craft for the Navy, and that it will be possible to make a rapid increase in our aeroplane fleet without much delay.

"I thank you sincerely for the deep interest you show in our aeronautic service, and will always appreciate your interest and suggestions.

"With sentiments of esteem and high regard, believe me,  
Cordially yours,  
(Signed) Josephus Daniels."

The report referred to by Secretary Daniels and transmitted by him to the House of Representatives, is as follows:

December 14, 1914.

From: Bureau of Construction and Repair and Bureau of Steam Engineering.

To: Navy Department (material).

Subject: Aeroplanes.

Reference: (a) Department's memorandum, December 12, 1914.

1. While the initial successes in air craft work were attained in this country, the design and construction here on a successful scale are still in the development stage. Foreign countries are far in advance of our builders. The marked progress of this class of work abroad is due mainly, if not solely, to the encouragement given to private manufacturers by foreign Governments. While there are only a few companies in this country that can at present be considered as competent designers and builders, their number is sufficient to stimulate competition and bring about great improvement in design, provided there is a reasonable amount of Government business in sight. Furthermore, there are other companies that are only awaiting the existence of suffi-

cient business to develop their ideas along the same line.

2. While the Government has resources, including a few officers specially trained in aeronautical-design work, this force can at present be considered as only a nucleus and is capable of carrying on only a very limited volume of work. It would be a tremendous loss to the advancement of aeronautical work to lose the ideas and results of private invention and experiment.

3. In view of the above and in view of the extremely hazardous nature of air craft work, involving the loss of life and property, if not designed and manufactured with extreme care and along what experience has taught to be the safest lines, the bureaus believe that it would be a great mistake for the department to undertake at the present time a manufacture of air craft except on an experimental scale.

4. Preparations have already been under way for about two years looking to the design and construction of an experimental machine, with a view to developing ultimately the necessary plans, specifications, and detail instructions for the manufacture of aeroplanes, both hulls and power plants, by private manufacturers, including shipyards, and by navy yards in an emergency. This experimental work includes a continued series of laboratory experiments on a large scale at the navy yard, Washington. The preliminary work toward the experimental construction above mentioned is already in hand, and it has been the bureaus' intention to take up the manufacture of such an experimental aeroplane at the Washington Navy Yard in the near future.

5. The establishment of a Government plant for the general manufacture of air craft would require a complement of officers that can ill be spared at the present time, not only because the Navy has a very limited number of specially trained designers in this class of work, but because such a plant would call for the diversion from actual flying work of many of the most competent operators. As stated above, the establishment of such a plant would tend greatly to discourage the valuable initiative and resources of private manufacturers, who should be encouraged and stimulated as a most valuable asset not only in the development of air craft but also for turning out such craft in quantities in time of an emergency. Any Government plant which could be established in the near future would be entirely inadequate in war time, as air craft would be required in large quantities in such an emergency.

6. It is therefore recommended that the utilization of existing plants for aeroplane work be confined to the construction of one or more experimental aeroplanes on the department's design at the navy yard, Washington, and the construction of an aeroplane engine at one of the navy yards, with a view to the preparation of departmental plans, specifications, and manufacturing instructions in sufficient detail for use in an emergency.

7. However, if the department directs the establishment of a plant for the manufacture of air craft, it is recommended that the work be done either at the navy yard, Philadelphia, or the navy yard, Norfolk, these yards having a moderate amount of space for testing work. A considerable portion of the necessary plant is already available at these yards, but certain special tools would be required; some delay would be experienced in training a special force of mechanics, who would have to be instilled with the supreme importance of perfect workmanship. The approximate estimated cost of putting the shops at one of these yards in order and establishing an air craft factory with a capacity of two or three machines per month is placed at \$30,000. The estimated cost of turning out such machines under the present navy-yard cost system is about \$6,000. This does not include the cost



of the commissioned personnel, classified employees, leave, holiday, and disability, and certain other overhead charges not at present included in the cost of work, and does not include the question of patent rights; all of these would probably run the actual cost much above the above figures.

(Signed) SCHAEFER, Acting.  
R. S. GRIFFIN.

## Revolutionary Developments in Naval Aeronautics

*From Flying for April.*

A DIRIGIBLE halting a ship at sea; a squadron of aeroplanes attacking a cruiser with bombs; a fleet of seaplanes starting from hangar-ships at sea to attack military bases; a seaplane launching torpedoes—these are events of tremendous import. They mark a new stage in the development of naval aeronautics and show clearly the advent of a new epoch, a period when the ships of the sea must face a new and potential adversary; when transports equipped with torpedo launching seaplanes will be a match to armored warships, and naval battles will be preceded by aerial battles, and the side winning in the air will have a preponderous advantage over the other.

That these things would come to pass was evident to a few people before the war, but they were admitted by very few naval authorities and as a result few countries had more than a handful of aeroplanes when war was declared.

When the war started naval aeronautics was in a period of experimentation. Until then navy people, trained to face the crushing force of the elements, looked at the frail aeroplane askance and asked for the supreme test, seaworthiness, before admitting it as a naval auxiliary. Without seaworthiness they could not see any use for the aeroplane and, accordingly, postponed the organization of naval aeronautic corps.

True, England and Germany started to organize a substantial naval air service some months before the war, but their plans were by no means adequate. Nations spending hundreds of millions in naval equipment failed to supply adequate aerial protection to their investment—they failed to supply means to extend the striking power of their navies over land just as they failed to supply the means to extend the potentiality of their armies over water, by supplying aeroplanes and dirigibles in large enough number to permit the employment of some for work of defensive and offensive nature.

The obstacle that has prevented the development of naval aeronautics more than anything else has been the obsession of naval men that an aeroplane to be of service to the navy should have the staunchness of a ship. With extreme lack of sense of proportions, they have failed to realize that what they expected in an aeroplane costing about \$10,000 and requiring only a personnel of two men was so revolutionary in efficiency afforded for the amount invested that judged by the same standard a dreadnought would represent an unjustifiable waste of money, as the cost of a dreadnought and the personnel required to man it is more than is required to establish and operate a fleet of five hundred aeroplanes.

The war has wiped away this obsession in Europe and, as fast as they are obtainable aeroplanes are employed for different purposes in connection with naval operations. The same aeroplanes which before the war were looked upon as useless for naval work are now found to be invaluable, and first consideration is given to the number obtainable and only secondly to the characteristics of machines.

An idea of what the aeroplanes are doing in connection with naval operations can be obtained from the following reports picked from scores of reports of similar events:

The first demonstration of how aircraft extend the potentiality of navies was given last December, on Christmas Day, in the raid on Cuxhaven. Three channel steamers were used as seaplane carriers from which the British seaplanes rose to go to drop bombs on the German stronghold. That was the first raid of that kind—it has required six months to get enough aeroplanes to allow them to employ some for such a purpose!

The next important raids were again made by British seaplanes, which started from sea bases, delivered their attacks and returned to their bases repeatedly—a startling demonstration carried out entirely with aeroplanes which naval authorities did not consider "seaworthy" six months earlier!

## The Invaluable Use of the Aeroplane

ON April 29 the French port of Dunkirk was shelled by invisible guns, which resulted in twenty persons being killed and forty-five wounded.

A misreading of the official communication in connection with the further statement that "German warships had been reported at large off the coast of Belgium" led to the belief that the German warships had been shelling Dunkirk.

But twenty-four hours later this apprehension was relieved by a note issued by the British Press Bureau, which read as follows:

"The shelling of Dunkirk is now reported by aerial reconnaissance to have been from a land gun, and the reports that German warships were off that port were due to a misapprehension."

Later on the British Admiralty announced that the position of the German gun had been verified by aircraft reconnaissance, and that it was attacked the same evening, twelve small and two large bombs being dropped.

This occurrence is a magnificently striking evidence of the multiple services aircraft render in time of war when efficiently employed.

To fully understand the effect of the above news, it should be borne in mind that the Atlantic ports of France are under the protection of the British Grand Fleet, the greater part of the French Fleet being kept in the Mediterranean.

If, therefore, a squadron of German battle cruisers should have succeeded in eluding the vigilance of the British battle fleet, incalculable harm would have befallen the Allies. France's Atlantic ports might have been bombarded, shipping partly destroyed, the rest tied up and the British Fleet be forced to send out her battle cruisers after the Germans in order to round them up and destroy them.

The activity of German commerce raiders and particularly the four months' cruise of Von Spee's Pacific squadron, show how elusive fast cruisers are and how long it takes to round them up.

These were the thoughts that flashed through every Britisher's, every Frenchman's mind at the news that Dunkirk had been shelled by the German fleet.

A few hours later all apprehension had disappeared. Thanks to a swiftly undertaken aerial reconnaissance the "German fleet" turned out to be a solitary long range gun that throws projectiles over a distance of twenty miles; and somewhat later it was known that this same gun had been bombarded by an aeroplane of the Allies.

Thus in the shortest possible time a \$10,000 aeroplane had saved thousands of lives and millions of dollars' worth of property and had reassured a fleet commander worried about his responsibility.

With no aeroplanes at hand, it might have taken days to find out whether there was a German naval force in the Atlantic and then it might have been too late for immediate action by the Allies and months may have elapsed before the German force was destroyed.

Once more—like in the battle of the Marne, where a couple of well placed aeroplane bombs destroyed the tunnel of Soissons and prevented General von Kluck from getting reinforcements in time—the aeroplane saved the day.

## Trans-Atlantic Flying Boats Cross Atlantic

REPORTS from England, Russia, and Italy state that Curtiss flying boats of the trans-Atlantic type are arriving there on schedule time (in boxes shipped f. o. b. Buffalo). From the reports we gather that they are used for quick transportation of officers and certain materials to ships and between naval stations and in connection with mine sweeping.

A point rather remarkable, these flying boats are equipped with two motors, which are run together or separate, according to circumstances. Thus the problem of equipping an aeroplane with two motors, to solve which Mr. Edwin Gould offered \$15,000 in prizes four years ago—which prize was not won—has been solved.



# THE NEWS OF THE WEEK

## New Hydro Altitude Record

A new world's record altitude flight of 10,000 feet in a hydro-aeroplane was made at Pensacola, Fla., on April 23rd, by Lieut. P. N. L. Bellinger at the naval aeronautical station. In 1 hour and 20 minutes Lieut. Bellinger made his ascent which, so far as official data shows, never has been equaled, and he took 16 minutes gliding back to earth. On June 13, 1913, Lieut. Bellinger made the best previous record for an altitude flight in a hydro-aeroplane at Annapolis, when he climbed to 6,200 feet. Greater altitudes have been attained in aeroplanes not encumbered with a boat.

## Physician Answers Call in Aeroplane

When he received an emergency call owing to an accident 11 miles southeast of Grinnell, Dr. Pearl E. Somers, prominent Grinnell physician, pressed into service W. C. Robinson, an aviator, who drove him through the air and landed him at his patient's bedside in six minutes after the machine left the ground.

## Ottawa Announces Formation of New Branch of Canadian Service—McCurdy in Charge

Arrangements for training aviators in Canada for the Royal Naval Air Service have been made by the Department of Naval Service, and a school under the direction of Mr. J. A. D. McCurdy will be started at the Long Branch Rifle Ranges as soon as the necessary preparations can be made.

The announcement that a Canadian Training School for Aviators has at last been formed was made to Divisional Headquarters yesterday in a letter from the Militia Department, Ottawa, stating that the Department of Naval Service has arranged with the Admiralty for the training of candidates in Canada for the Royal Naval Air Service. The letter further states that candidates will receive instruction at Mr. J. A. D. McCurdy's flying school, it being pointed out also that the order-in-Council of September 17th last, prohibiting aviators from flying within 20 miles of any Canadian city during the continuation of the war does not apply in the case of naval or military aircraft belonging to, or employed in the service of the King.

While no details as to the requirements of recruits for this service have been made, it is expected that the school will be conducted in the same manner as training schools for aviators in the Imperial service. It is probable that some mechanical knowledge on the part of recruits will be required, but as a regular branch of the naval service it is hardly likely that any fee will be charged, although men enlisting will be expected to offer themselves for active service. The formation of this school is also sure to interfere with the activities of professional aviators, who have contemplated starting training schools and charging a fee for their certificates. Although several reports have appeared respecting a Canadian aviation school, to-day's announcement is the first official word on the subject.

Mr. McCurdy, who is well known in Toronto, is a graduate of Toronto University, where he took a course in the School of Practical Science. He is a native of Baddeck, N. S., and is one of the most famous aviators on this continent. His flight from Key West to Cuba about four years ago attracted much notoriety, and he has the distinction of being the first aviator to despatch a wireless message from an aeroplane.

## Thomas on Lake Cayuga

The Thomas Brothers Company now have a hydro-aeroplane in operation on the lake for the use of the pupils of the Thomas school. It is a sixty-horsepower machine and is used solely in practice flights.

The Thomas company is communicating with a number of contractors in order to get bids for the construction of either two single or one double hangar in which aeroplanes may be kept during the days in which they are tested. The hangars will be built on the tract to the north of the city which is known as the Industrial tract and it is expected that they will be completed within three weeks so that the first of the machines sold to a European nation may be housed in the hangar during the testing period.

## The Chicago Aero Works Incorporates

The Chicago Aero Works, which was established in 1909, has just been incorporated, with H. S. Renton as president and Max Stupar as vice-president and constructor. They have made all kinds of aeroplanes—monoplanes and flying boats—as well as biplanes,—but they specialize in the Stupar Tractor Biplane, built for Earl Daugherty which was illustrated on the front cover of the April 19th issue of *Aerial Age*. One of their tractors made a record of having flown constantly for two seasons without breakage of any kind, flying thousands of miles, and making flights in nearly all the states in the Middle West.

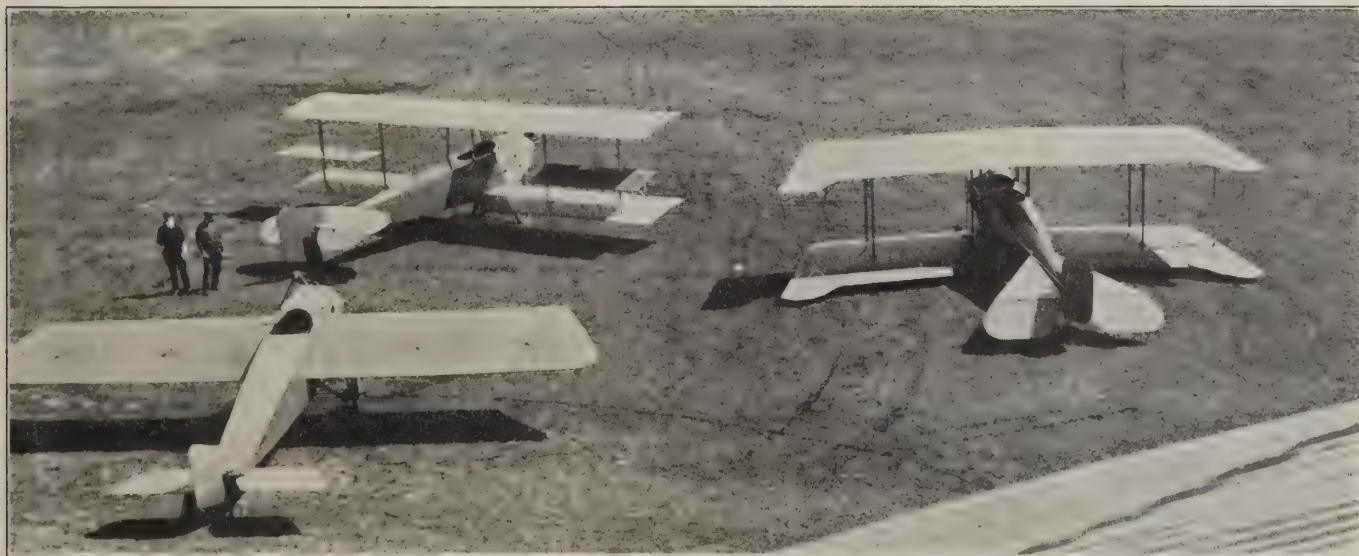
## Luckey Gives Exhibition Flight for Sing Sing Prisoners

On April 26th, William S. Luckey, carrying George East as a passenger, gave an exhibition flight at Ossining for the entertainment of the prisoners in Sing Sing. Many of the long termers, who were locked up before the advent of the flying machine, were spellbound when they saw the heavier than air machine ascend from the grounds just outside the walls, circle about the prison buildings and dash down the river.

## Hammondsport News

Walter Johnson is one of the Curtiss pilots at Hammondsport.

S. S. Pierce at the Curtiss plant at Hammondsport acts in various roles—shop inspector, interpreter, pilot, teacher, etc. He may go to Toronto to be teacher at the Curtiss school there, which is headed by J. A. D. McCurdy.



A common sight at the Garden City Aerodrome, L. I. Some of the splendid new machines now at the field. From left to right they are: The Sloane-Morane Monoplane, the Huntington Tractor, and the Gallaudet Tractor.





Robert G. Fowler in the "Fowler Flyer" at the San Francisco Exposition

#### Miss Stinson Plans Transcontinental Trip

Miss Katherine Stinson has announced her intention of undertaking a transcontinental flight from New York to San Francisco this summer. If the arrangements can be perfected in time she intends to start about June 1. She will use her new Stinson-Partridge tractor biplane equipped with a 90 h.p. Gyro, and will be accompanied by a special train, equipped to meet any emergency that might arise from accident or unfavorable weather.

Miss Stinson made the public announcement of her project in San Antonio, Tex., where she has been spending the winter. It was said that she would come to New York within the next few weeks to superintend the equipment of her aeroplane and perfect other necessary arrangements. The start may be made from Governor's Island.

#### Capt. Hugh L. Willoughby to Renew Aeronautical Activities at Newport

Capt. Hugh L. Willoughby, of Port Sewell, Fla., who has a factory for the construction of his hydroaeroplanes at Newport, R. I., recently left Florida for Newport where he will renew his aeronautical activities this summer.

#### CICERO NOTES

Saturday, April 24th, the Hensel Wright Biplane was taken out for its first flights of the year. It ascended to quite an altitude and flew far out around the borders of the field. The Selleck Nieuport was also out.

#### Texas School of Aviation

Mr. Paul Vandevelde, recently from Belgium, has organized in Dallas, Texas, an aviation school which will be opened about the middle of this month. He has secured a very fine tract of level ground for his field, and has already enrolled about a dozen pupils. He will use a Curtiss Biplane for tuition work and it will be piloted by a Curtiss graduate. An interesting development which the school will inaugurate in Texas, is aero mail service, the Governor of the State having granted a permit for one of the

associates of the Texas School of Aviation to carry mail over route No. 650,003—from Dallas to Oklahoma City.

#### An Omission

We very much regret that, through an inadvertence, we failed to give credit to Messrs. James Erickson and Raymund V. Morris for the photographs of the view of the San Diego Exposition which we printed on the cover of the last issue of *Aerial Age*.

#### To Open Flying School in Salt Lake City

It is announced that H. B. Thomas of Salt Lake City, Utah, will shortly open a flying school there which will be in charge of R. J. Davis, an early Curtiss pilot. They will use as a school machine a new type biplane constructed by Mr. Thomas.

#### Urges American Manufacturers to Build Aviation Engines

In the opinion of George B. Warner, manager of the Renault Company in Paris, there is a very good opportunity at the present time for American manufacturers of aviation motors to increase their trade abroad as well as in this country.

The entire product of the Renault and other well known aeroplane engine works in Europe is taken for government use, as Mr. Warner explains the situation there. Orders from other sources, even from the United States government, cannot be filled by the builders. He believes that manufacturers in this country who procure rights to produce the standard European motors would soon be doing a thriving trade.

"Since the war began," said Mr. Warner, "we have enlarged our engine plant, taking over an automobile factory for the purpose. We are now turning out ten aeroplane engines daily. The French government allows fifteen per cent. of the French motors to go to the British and Russian governments, retaining the rest for its own use. There is a great demand for the stationary V cylinder water cooled type, which is here to stay, owing to its achievements in duration. The United States army, I notice, recently made a world record for duration with passenger, using one of these engines, an old model bought from us several years ago.

"In aviation the tendency is toward more power. The military aviators want machines that will carry men and guns and fly faster than the enemy's aeroplanes—something that can fly in circles around him and shoot down. To meet this demand we are turning out motors of 150 and 200 horsepower. These are being built into the latest machines. Nearly all the new French machines are biplanes. The monoplane is being used little because it affords a poor platform for observation. The wings are in the way of the observer.

"The latest 200 horsepower biplane will have a speed of about eighty-five miles an hour. It will carry four men and a six-pounder gun throwing a projectile with a bursting charge. This is an advance on the types in use carrying the mitrailleuse, or machine gun shooting bullets. In the engine themselves there is a tendency to lower speed. We are giving 1,600 revolutions instead of 1,800 a minute with good results."

#### Chicago to Kansas City via Air in One Day

In a cross-country flight which started at Cicero Park, Chicago, Robert Neal, in a home-made aeroplane, landed twenty miles north of Kansas City. The engine of his machine had become heated and ceased running properly. He was able, however, to hold his machine upright and alight without serious injury. The aeroplane was wrecked. Neal got a farmer to take him to the Excelsior Springs electric line, and there caught a car to Kansas City.



The New Sloane Military Tractor Biplane equipped with a 90 h. p. Kirkham motor and piloted by John Guy Gilpatric.



## Military Aviation Notes

**A**N examination of officers to determine their qualification for rating as JUNIOR MILITARY AVIATOR, commenced on April 23, 1915, at the Signal Corps Aviation School, San Diego, California, before a board of officers, consisting of:

Captain Fred W. Palmer, Med. Corps,  
 Captain Townsend F. Dodd, A. C., S. C.,  
 1st Lt. Walter R. Taliaferro, A. O., S. C.,  
 1st Lt. Carleton G. Chapman, A. O., S. C.,  
 1st Lt. Harry L. Shurmeier, M. R. C.

The officers examined:

2nd Lt. Shepler W. Fitzgerald, C. A. C.,  
 2nd Lt. Walter G. Kilner, Infantry,  
 2nd Lt. Rodondo B. Sutton, C. A. C.

The methods employed in this examination, mark a new departure in the training of Aviation Officers. The tests are divided into (a) Physical fitness, (b) General adaptability, (c) Technical ability. The candidate is subjected to a rigid physical examination. His knowledge of military aviation, ability to practically apply the knowledge, trustworthiness and ability in the performance of duty, and his record as an officer and an aviation student, comprise the subject of general adaptability. Under technical ability the candidate will be examined theoretically and practically. The scope of the former embraces the principles of aerodynamics, essential to the care, operation and repair of machines, theory of internal combustion engines, meteorology, including general laws of the atmosphere, and navigation of the air.

The practical examination consists of questions regarding the care, repair and operation of machines and aeronautical motors, and actual making of such repairs and adjustments as dismantling and assembling of motors and machines.

Under flying, the candidate will demonstrate his knowledge by operating a machine in a cross-country flight without landing; the minimum length of any side of the triangle to be twenty miles. He will make a straight-away cross-country flight, without landing, of a minimum length of ninety miles, (a flight practically from San Diego to Los Angeles) and will during this flight remain for half an hour at an altitude between 2500 and 3000 feet, as disclosed by the recording barograph. He will make such starting and landing flights as the Board may require, such as landing on a mark, within restricted areas, etc. A percentage of 70 or over, with the recommendation of the Board, is necessary to obtain the rating.

This exacting examination is the result of the new system of technical instruction inaugurated last Fall. The present rigid course of instruction, embraces lectures and classes in aerodynamics for the officers, practical and theoretical instruction in the machine shop, repair of engines and aeroplanes, for officers and enlisted men. Mr. Grover C. Loening, Aeronautical Engineer, is in charge of the Aerodynamical course for officers and Captain Townsend F. Dodd is in charge of the theoretical course for officers and enlisted men. The scope of instruction for officers and men is being broadened regularly. The increased efficiency of the command as a result, has been pronounced and gratifying.

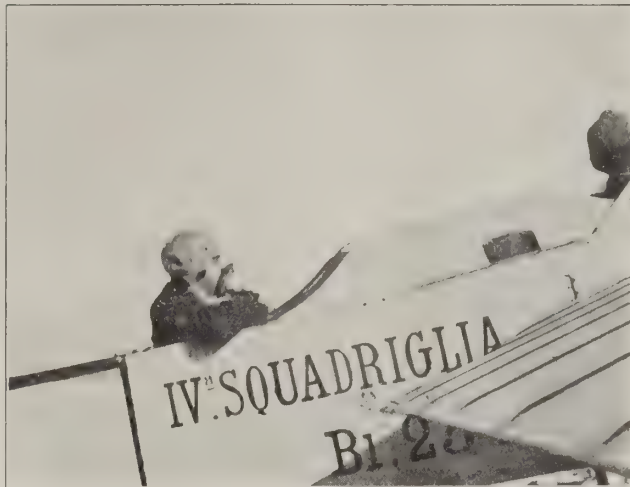
Lieuts. T. De W. Milling and B. Q. Jones, Signal Corps, with aeroplane No. 31 and a detachment of eight men, are at Brownsville, Texas, where they are performing scout duty for the large command there. Lieut. J. C. Carberry, Signal Corps, at present on duty at the Curtiss Aeroplane Co., Buffalo, N. Y., has been ordered back to San Diego, via the Burgess Aeroplane Co., at Marblehead, Mass., upon the completion of the eight Model-JN—Curtiss, speed-scout, tractor biplanes, for the 1st Aero Squadron. Captain Cowan, Commanding Officer of the Signal Corps Aviation School, has announced that these machines will be delivered about May 15th.

Captain Benjamin D. Foulois, Signal Corps, Commanding the 1st Aero Squadron, has just completed an exhaustive test of the 2-ton Jeffery (Quad) trucks with special body designed for transporting aeronautical supplies in the field. Sixteen of these tractor-drive will transfer the Squadron. Six are now on hand. Two of the trucks are being equipped as portable machine shops.

Captain Roy C. Kirtland, (Infantry), who has been for four years on duty with the Aviation Corps of the Army, has been relieved as Supply Officer, by 1st Lt. Irving M. Madison, Signal Corps.

Second-Lieut. Earl L. Canady, 13th Cavalry, was on April 10th, 1915, attached to the Aviation Section, as an Aviation Student.

Among the recent visitors at the Aero Club of America was Antony Jannus who recently arrived from Baltimore where he has been conducting very successful tests with his new 120 h.p. Maximotored flying boat. He was enthusiastic over the new machine's performance and announced his intention of entering the National Aeroplane Competition.



Turner AviaPhone Used by Aviator in Italian Army

## CALIFORNIA NEWS

By George B. Harrison

Arthur Smith's illuminated night flying and rocket firing while looping has been caught by the motion picture camera at the Panama-Pacific Exposition, and is being featured in the "movie" houses. The motion pictures show Smith's fiery loop distinctly, and are regarded by the picture magnates as a remarkable achievement in motography.

DeLloyd Thompson, who spent the winter in Southern California, where his looping with passengers was a common incident in flying near Los Angeles, is now traveling East with Barney Oldfield. Thompson and Oldfield are filling exhibition dates together, and are booked for aeroplane-automobile races through the coming season.

Hollis E. Cooley, chief of the department of special events of the Panama-Pacific Exposition, is taking a special interest in aviation events for the San Francisco exposition. In addition to the contract now being filled by Art Smith, the Exposition has under consideration propositions for a number of special events during the summer.

General Parke A. Van Tassel, the veteran balloonist who is now living at Oakland, took Guy T. Slaughter's balloon, "Queen of the Pacific" to Honolulu recently only to find that all ballooning and aeroplaning at Hawaii is forbidden by the government authorities because of the necessity of protecting the fortifications at Pearl Harbor against unlawful mapping.

A series of demonstrations of possibilities in shooting from a flying aeroplane is planned by Robert G. Fowler with the co-operation of the Remington-Arms-Union Metallic Cartridge Company at the Panama-Pacific International Exposition. Fowler intends to fly over San Francisco bay on the Exposition front, carrying Carl J. Schilling or Mrs. Ada Schilling, who are both noted target shots.

Targets will be placed on the water and rifle shooting undertaken at different elevations. Mrs. Schilling is also planning to release toy balloons from the flying boat and to shoot these aerial targets as the aeroplane leaves them behind. Preliminary trials have convinced the Schillings that target shooting from a flying boat will be entirely successful. It is planned to conduct the first trials some time in May.

Fowler has been fortunate in booking passengers for aeroplane flights along the Exposition waterfront with his new "Fowler Flying Boat No. 1," but unlucky in the weather that prevailed during the month of April. Despite offers of bonuses for flights Fowler has been compelled to refuse to carry passengers on numerous occasions because of the unusually high winds which have prevailed. On April 20, while taking C. Strauss, an Exposition visitor on a flight, a bad wind pulled the flying boat down into the bay and caused a wreck which discontinued passenger carrying temporarily. Silas Christofferson also suffered a wreck at the Exposition recently when his flying boat was carried from its moorings in a gale. On one Sunday afternoon when the wind blew a 50-mile gale Art Smith signified his willingness to fill his exhibition date, but he was notified by the Exposition authorities to remain on the ground. The winds at the Golden Gate will be milder during May and more flying is expected at the Exposition.



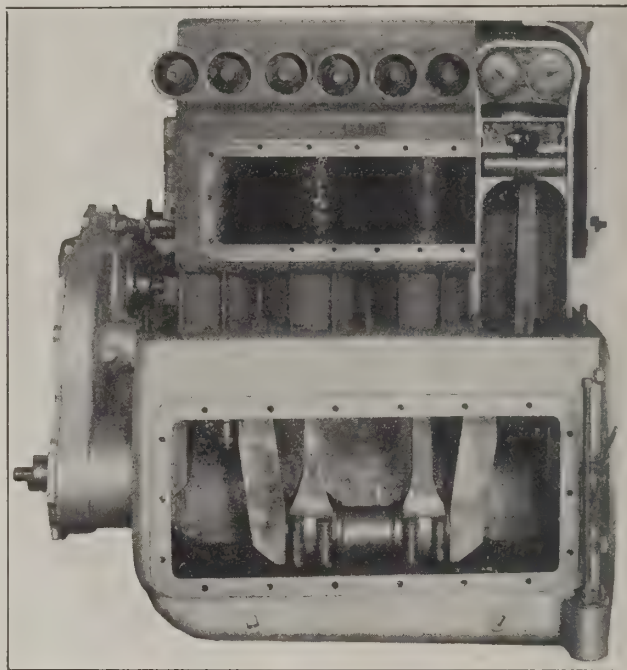
## Duesenberg Motors

By N. MacCoull

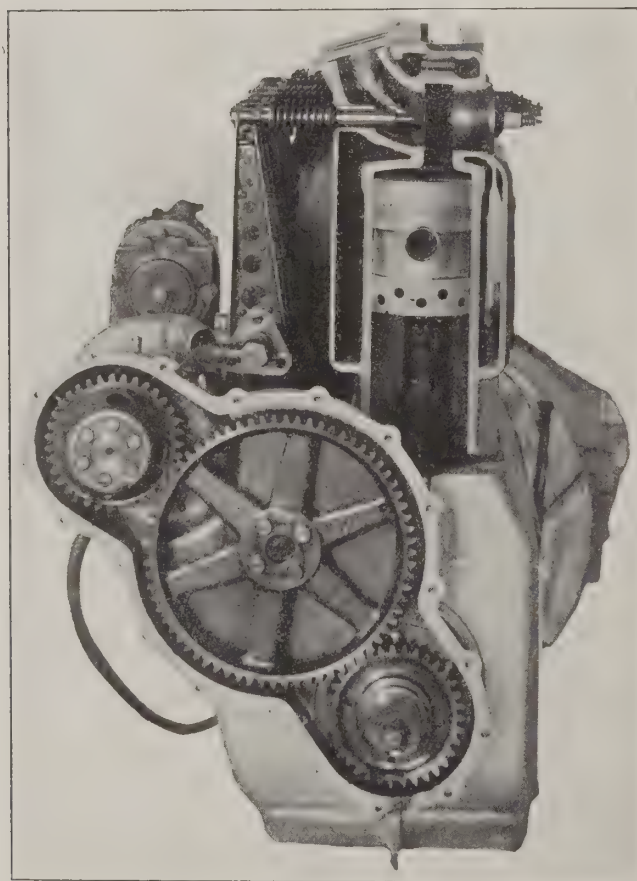
**D**URING the past year the motors of the Duesenberg Motor Co., of St. Paul, have achieved some notable victories in automobile and motor boat racing. A few of the standard four-cylinder motors have been supplied for aeroplane service. A new aeroplane motor is now under consideration by this company, which is to involve all the general characteristics which have been so successful in their former models, but considerably lighter. The result is awaited with interest for the present motors are not as heavy as some used on aeroplanes.

The two four-cylinder motors manufactured by this company are known as the Special A and the Special A-3, the former having a bore of  $3\frac{63}{64}$  inches and the latter a bore of  $4\frac{3}{8}$  inches. Both have a stroke of 6 inches, giving a stroke bore ratio of 1.5 for the former and 1.37 for the latter. These motors are identical in every way except for the cylinder bore, the cylinders which are cast *en bloc*, being interchangeable on both.

The usual valve construction which is characteristic of all Duesenberg motors is used, the valves being located in the center of the head, in a horizontal position. This is the result of a great deal of experimenting which has shown that the resistance offered to the gases by the straight passages which are possible, is so small that many of the advantages of the overhead valve are secured, without their complications. Another advantage is the ease with which the valve stems may be lubricated. Good lubrication at this point not only greatly reduces wear, but forms a film of oil around the stem which helps to conduct the heat from the stem to the guide and into the cooling water, preventing scored and warped stems, which would bring the valves out of line with



Side View Showing the Two Bearing Crank-Shaft



Section Through End Cylinder Showing the Peculiar Valve Construction Characteristic of Duesenberg Motors. Note the Freedom From Delicate Parts, and the Straight Gas Passages

their seats. The spark plugs are inserted in the valve caps through which the valves may be removed without taking them through the cylinder as is often necessary. This location of the plug brings the spark near the center of the combustion chamber, assuring a rapid flame propagation which is important in such high speed motors as these.

The valves are of tungsten steel,  $2\frac{3}{16}$  inches outside diameter, giving a clear opening of  $2\frac{1}{16}$  inches and a lift of  $\frac{3}{8}$  inches. The springs are retained by a taper split wedge and cup washer.

The rocker arms are of pressed steel with welded and hardened contacts which bear directly on the cams and valve stems. The angular movement of the rocker is so small that it does not have a tendency to rock these valve stems, and the wear of the center bearing is practically negligible. The tube on which the rocker arm hinges receives oil directly from the oil pump and distributes it to each rocker arm through an oil duct on to the cam from which point it falls into the lower splash troughs. The entire valve mechanism is very accessible and is enclosed by an oil tight cover.

The connecting rods and cylinders are oiled by a variable level splash system which can be regulated from the driver's seat at will. Two oil pumps are provided, one forcing cool oil direct from the main oil tank to all bearings, from which it overflows to the main splash troughs. The second and larger pump takes the oil from these troughs and returns it to the main supply tank for cooling.

The connecting rods are 12 inches long and made of the best quality chrome nickel stock properly heat treated and finished all over so as to be very light. The lower end is held by four  $\frac{7}{16}$  inch vanadium steel bolts, making a very firm fastening. The wrist pin which is  $1\frac{1}{4}$  inches in diameter, is clamped by the upper end of the rod, and has its bearing in the piston. These pins are bored out tapering to the outer ends so as to have the maximum strength with the minimum weight, and are case hardened, ground and polished.

The pistons are of a light alloy so designed that they will carry away heat from the head through the extensive light ribbing which adds greatly to their strength and stiffness. They are amply long for good wearing qualities, and in order to reduce weight have several holes drilled in the lower part of the skirt. A tripple ring in one groove is used which minimizes leakage.

The two bearing crankshaft is one of the features of these motors as it makes possible a very short crankcase. It is  $2\frac{1}{4}$  inches in diameter and made of chrome nickel steel, extremely stiff insuring long life to all bearings. The front bearing is 4 inches long, the rear  $4\frac{1}{2}$  inches, and those of the connecting rods are  $2\frac{1}{2}$  inches wide and  $2\frac{1}{4}$  inches in diameter. These bearings are either babbit lined or of Kelley metal, as desired.

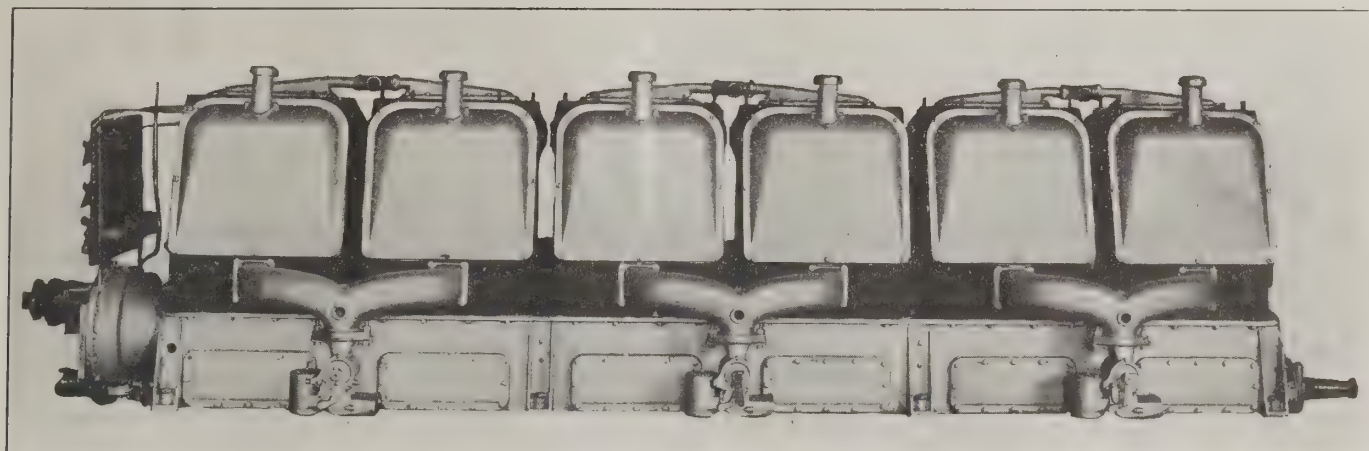
The crankcase is of the barrel type carrying the oil reservoir in the same casting. The side of the case has a cover plate over an opening 6 inches by 18 inches through which the shaft and connecting rods may be thoroughly examined when necessary. Cylinder diameter may be measured through this opening which often saves tearing down the motor just before important races.

Timing gears are of tool steel and so arranged that timing may

be changed one-quarter of one tooth at a time, when a change is desired. The cams and camshaft are integral, and supported by three Non-Gran bronze bearings.

Both motors weigh about 365 pounds without fly-wheel. The Special A motor develops 85 horsepower at 2220 R. P. M. though the maximum power is not reached until the speed passes 2500 R. P. M. When 85 H. P. is developed the unit weight is 4.3 pounds per H. P.

On this page is shown a twelve cylinder motor, the bore and stroke of which are  $6\frac{3}{4}$  inches and  $7\frac{1}{2}$  inches respectively. At 1500 R.P.M., its rated speed, it develops 750 H.P., and as it weighs 2,700 pounds, the unit weight is only 3.6 pounds per horsepower. This weight could be reduced considerably by the "V" arrangement of the twelve cylinders in which case one-half the weight of the crankcase and crankshaft would be saved. One of the motors shown in this cut was used in Com. Jas. A. Pugh's "Disturber IV" which holds the world's record of 59.1 miles per hour on the water.



*The Twelve Cylinder 750 H. P. Duesenberg Motor Which Gave "Disturber IV" the World's Record for a Motor Boat of 59.1 Miles Per Hour*

## New York Militia Wants Aviators

COMMANDER Charles L. Poor, of the New York Naval Militia has written to President Alan R. Hawley of the Aero Club of America for co-operation in organizing aviation corps for the New York Naval Militia. His letter reads as follows:

First Battalion, N. M. N. Y.  
U. S. S. Granite State,  
U. S. S. Wasp. Foot West 97th St.,  
New York City.

President of the Aero Club of America.

Sir:—

It is purposed with the co-operation of the Navy Department to organize as a part of this battalion an aeronautical squad, or division. It is the plan at first to start in a small way, say with two units of an officer and six men each, and expand as occasion offers. It is believed that an active and efficient organization can be built up in this way.

It seems logical that the naval militia offers the best medium for those interested in aviation to ally themselves to the national defence and be of service to their country, and the Navy Department is much interested in building up an aviation corps of volunteers through the Naval Militia, it is through the Navy and Naval Reserves in Great Britain that the volunteer aviators have been able to render such active and valuable service.

The members of the aviation units would be enlisted regularly in the Naval Militia, in the regular way for three years, and would have the same obligations and same privileges as the Naval Militia, but their drills and duties would be entirely in connection with their special branch. At such times as the battalion went afloat on a battleship on its regular ten days or two weeks practice

cruise, it is suggested by the Navy Department that it would be desirable for the aviation squad in lieu thereof to be ordered to the Navy Aviation School for the same period and under the same conditions of pay and so forth to receive instruction there.

Knowing the strong interest of your members in this science and believing there must be many who would be glad to serve their country in this way, I make this appeal for your interest and co-operation, and ask that you make known this organization to your members.

Yours respectfully,

Charles L. Poor,  
Commander N. M. N. Y.  
Commanding First Battalion.

President Hawley has assured Commander Poor that he will have the Club's hearty co-operation. The letter has been referred to the Club's Committee on Military and Naval Aviation. The members of this Committee are:

Cornelius Vanderbilt, Chairman.  
Major F. L. V. Hoppin, N. Y. N. G.  
Brig.-Gen. Robert K. Evans, U. S. A.  
Lieut.-Col. Samuel Reber, U. S. A.  
Capt. A. S. Cowan, U. S. A.  
Capt. Mark L. Bristol, U. S. N.  
Lieut. Comm. H. S. Mustin, U. S. N.  
Major Charles Elliott Warren, N. Y. N. G.  
Lieut.-Col. C. de W. Willcox, U. S. A.

The Aero Club, with the co-operation of the Affiliated Aero Clubs is organizing the National Aeroplane Competition to start July 4th and end October 12th, one of the purposes of which is to develop aviators for the Naval Militia and the National Guard, and the prospects warrant saying that it will develop aviators for many states.



WITH prizes aggregating \$20,200 already offered, two tentative offers of prizes aggregating \$50,000 for trans-continental flights, and more than one hundred cities advising that they want to participate in this nation-wide movement and offering prizes to induce the aviators to visit their cities en route, the success of the National Aeroplane Competition is assured.

Its patriotic purpose is now certain of fulfilment. This purpose is to assist the War and Navy Departments of the United States in developing aviation corps for the National Guard and Naval Militia, to demonstrate for the Post Office Department the practicability of carrying mail by aeroplane to hundreds of places so isolated that it now takes days to deliver mail that could be delivered by aeroplane in a few hours, to develop the sport and to demonstrate the practicability of the aeroplane for general use.

### Thirty-two Applications for Entry

The unsolicited applications for entry now number thirty-two, and include the foremost constructors and aviators of the United States. Notices, which had not been sent to the aviators because the preliminary details of organization had not been completed are now being sent to one hundred and fifty licensed aviators who have not yet applied for entry. It is expected that the result will be that not less than seventy-five aviators will participate in the Competition.

### Three Trans-Continental Routes Proposed

To carry the competition into every state the Contest Committee has outlined three main trans-continental routes. Every aviator in America will be able to reach one of these routes at some point by a cross-country flight of moderate length. The Contest Committee expects that there will be many aviators who, in competing for the Daily Prize, and for the special prize which may be offered, for the greatest number of miles covered by one machine during the Competition, may continue in a straight line and thus cross the continent while competing.

Therefore, the three routes have been proposed, and efforts are being made to secure prizes for trans-continental flights. The matter of adopting three routes, however, is subject to modification. The time available for organizing is short, and unless substantial prizes are offered promptly by cities located along other routes, there will be only one main route, with proper organization and landing stations at suitable intervals, to facilitate crossing the continent. This will be the Lincoln Highway, with New York, Boston and other suitable starting centers on the Atlantic Coast, and San Francisco, Los Angeles and San Diego as starting centers on the Pacific Coast.

As most aviators will prefer to cross the Rockies at southerly and more accessible points, arrangements are being made to have landing places established along the southern routes as far south as El Paso, Texas.

### Lincoln Highway Association, American Automobile Association and Automobile Club of America Offer Co-operation

Plans for a permanent trans-continental aerial highway, to be used by the aviators in the National Aeroplane Competition, are being developed by the Committee on Aeronautical Maps and Landing Places of the Aero Club of America, of which Rear Admiral Robert E. Peary is Chairman. The LINCOLN HIGHWAY has been selected as the central route of the trans-continental aerial highway, with some modifications. Deviations in a southerly direction have been made to enable aviators to cross the Rockies at the most accessible point.

This was the direct result of the generous offer of co-operation extended to the Contest Committee of the National Aeroplane Competition by the Lincoln Highway Association, The Automobile Club of America and the American Automobile Association. This guarantees the co-operation of Automobile Clubs and Associations throughout the United States, who will arrange to prepare suitable landing places and to supply stations for aeroplanes, and will assist the aviators wherever they may land.

These generous offers are of the utmost value. They afford the co-operation of a splendidly equipped and substantial organization which has branches in every city along the route from the Atlantic to the Pacific. Each of the local automobile organizations are active, and ready at the shortest notice to co-operate in carrying out the plans of the National Aeroplane Competition.

Appreciating the value of their offer, the Contest Committee accepted it, and thanked Messrs. Henry B. Joy, president of the Lincoln Highway Association; A. R. Pardington, vice-president and secretary; Russell A. Alger and Frederick M. Alger the Governor of the Automobile Club and President Wilson of the American Automobile Association for same.

The co-operation of the Automobile Association of America is especially valuable and Messrs. Jno. A. Wilson, president, and A. G. Batchelder, chairman of Executive Committee, are to be thanked for their valued offer.

## The National Aeroplane Competition



Stevenson MacGordon



J. B. R. Verplanck

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### Tentative Schedule

The tentative schedule of other Prizes to be offered is as follows:

A \$25,000 prize to be divided between the three aviators who make the best time in flights across the continent, starting from or ending at New York. This may induce the eastern aviators to continue their flights to the Pacific coast and the western aviators to the Atlantic, and possibly may result in a number of trans-continental flights during the Competition.

A prize of \$5,000 or \$10,000 for the best demonstration of the practicability of mail carrying, to be judged from the standpoint of regularity of service, protection afforded to mail matter from the elements and the advantage of time saved over other methods of mail distribution. The Post Office Department has prepared a schedule of isolated places in certain states where the delivery of mail between points twenty and ninety miles apart now requires days, but which would require only an hour or two by aeroplane. The principal value of this prize is that it will afford to the Post Office Department the opportunity of determining if the people who want their mail delivered promptly will pay between 25 and 50 cents to have it delivered by aeroplane. If so, aero mail-carrying will be self-supporting and the Post Office Department can establish a number of lines immediately and thereby solve some difficult problems of mail distribution, as well as to begin the creation of an aviation reserve which will



n—To Start July 4th and End October 12th

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H. K. Crowell



John Guy Gilpatrick

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## Additional Prizes

have the advantage of being used daily in peace, while being ever ready for service.

Prizes amounting to between \$5,000 and \$10,000 to be divided among the aviators who cover the greatest number of miles during the Competition, flying entirely by chart and compass.

Prizes of between \$1,000 and \$5,000 for:

The best land and water aeroplanes participating in the Competition, considered from the standpoint of engineering and general finish in construction of the machine and comfort afforded to the pilot and passengers.

The best "schedule record" made, judged by the number of times an aviator reaches previously designated places on time.

The best demonstration given by both land and water aeroplanes equipped with automatic stabilizers.

The lowest consumption of fuel and oil for miles covered.

The largest number of passengers carried a given distance in land or water aeroplanes, the construction of the machines to afford the pilot and passengers the greatest possible amount of convenience and having proper seating capacity for each.

The best demonstration given by either a land or water aeroplane equipped with two motors, which can be run independently of each other.

Besides these will be the prizes to be offered by states, cities, institutions, organizations, etc.

## Aerial Races and Circuits During Competition in Different Parts of the Country

To assure to every part of the country substantial flying demonstrations, the Contest Committee will, as soon as they have received replies from the Mayors and Chambers of Commerce of the 1,300 cities to whom they wrote recently, give the cities offering substantial inducements, the privilege of organizing aerial races from their cities to other cities offering prizes.

This will enable an enterprising city to "club" with from six to ten other communities offering prizes of \$500 or more each, and give to the people of that locality an aviation event such as has never been witnessed in this country. The direction, time and conditions of the race will be left to the discretion of the city organizing same, with the condition that it must not last longer than five days from date of start to date of finish and that it cannot be held at the same time that a similar event is being held within a radius of 500 miles, and that there shall not be more than 5 events of this kind held in the country on the same time.

Cities wishing to hold such an event are invited to state to the Contest Committee the dates on which they prefer to hold their events and the extent of their plans and resources. The applications are given prompt consideration, the dates reserved, and the aviators advised, so they may make their plans accordingly. As twenty-two aviators, among whom are the foremost of the country, have applied for entry at date of writing, and at least three-fourths of the hundred and fifty other licensed aviators are expected to participate, there will be a sufficient number of aviators to insure a large number of participants in all the events to be held throughout the country at the same time.

While the Lincoln Highway is selected as a central route, aviators may branch out in all directions or come to it from all directions. If cities at a distance of 500 miles from the Highway, on either or both sides, wish to have participants in the Competition fly there, circuits can be arranged and races held over the circuits, after which the aviators may proceed as they wish. For instance, if Peoria and Springfield, Illinois, St. Louis, Missouri, Atchison, St. Joseph, Falls City, Nebraska City and Lincoln, or only some of them, or other cities of the same territory, offer inducements, the aviators, instead of flying direct from Chicago to Omaha, via the Lincoln Highway, will stop long enough to make the circuit, Chicago, Springfield, St. Louis, Kansas City, Omaha and then back to Chicago via the Lincoln Highway, or via Des Moines, Grinnell and Davenport, Iowa.

## Land and Water Aeroplanes on Equal Terms

The present plans put the land and water machines on equal terms, the opinion being that while the land aeroplane may, in some cases, have a decided advantage in speed and can fly over mountains where the water aeroplane cannot venture, the water aeroplane offers decided advantages for covering the longest distance within ten hours as it can fly along any coast, rivers or chain of lakes, and be sure of a suitable landing place anywhere along the route. The chances of a water aeroplane, whether flying boat or hydroaeroplane, in the Daily Distance Competition, are, therefore, equal to the chances of land machines.

Participants in the water-flying class may start from any of the stations toward any other station. On the Atlantic Coast these stations will include practically every port close to the seashore, including New York, Boston, Newport, Providence, New Haven, Atlantic City, Wilmington, Del., and Norfolk. Every Naval Reserve Centre on the Lakes, as well as on the Atlantic, Pacific and Gulf, will be made a station for water flying contests.

One of the principal purposes of the competition being to aid in organizing aviation corps for the Naval Militia and the National Guard, by arousing interest and inducing young men to become aeroplane pilots, the reserve centres have been selected for stations.

## To Demonstrate Aeroplane Mail Carrying

One of the principal purposes of the Competition is to demonstrate the practicability of carrying mail by aeroplane. This is a matter of the utmost importance, as the use of the aeroplane will not only mean the solution of some difficult problems of mail delivery to isolated places, but also bring into use for peaceful purposes a large number of aeroplanes that would constitute a valuable reserve.

The isolated places where aeroplanes could be used to advantage to deliver mail are hundreds in number. During the Competition the aviators will carry mail to different places, arrangements for which are being made.

The employment of aeroplanes for carrying mail will bring about the adoption of aircraft for general purposes. This, in turn, will bring about aerial transportation. Aerial transportation will bring about transportation many times faster than our transportation of to-day, which will not only solve difficult transportation problems, but at the same time bring a new factor of fundamental potentiality, which promises, in its prospective development, to solve many of our most pressing economic and sociologic problems.



# The Mayo Military Tractor Biplane

By Walter H. Phipps

THE new 90 hp. Gyro motored Mayo tractor biplane designed by Chance M. Vought, the well-known pilot and designer, with the assistance of Stevenson Mac Gordon, is without doubt one of the finest examples of modern aeroplane design and construction which has yet been produced either in this country or abroad.

The very first impression that this remarkable biplane conveys is one of speed and efficiency. Every line, every detail bears evidence of having been most carefully worked out; the whole structure is compact and of the least possible head-resistance.

## General

The machine is designed to meet the demand for a high-speed reconnaissance aeroplane capable of a very fast climb and carrying, with ample reserve, a load comprised of pilot, observer, five hours' fuel and oil supply, 80 pounds wireless and the usual flight instruments.

With this useful load the craft is calculated to have a speed range of eighty-two (82) miles (132 Km) per hour maximum and forty-three (43) miles (69 Km) per hour minimum. A landing velocity of considerably less than the latter, or about thirty-six (36) miles (56 Km) per hour is attainable.

The designers of the Mayo biplanes have made every effort to construct premier air-craft incorporating harmonious design and solidity of construction with the best aerodynamic principles.

Special attention has been devoted to the matter of range of vision for both pilot and observer. The observer is placed forward of the lower wings permitting practically an unobstructed view forward, upward and downward. The pilot can see over the top planes and has an unobstructed view left and right and behind. The lower wings are cut away at the trailing edge.

None but the very best materials and accessories obtainable are employed throughout the construction. Special alloy steels, wire and other metal parts are used, with the result that the finished machine is reasonably light yet tremendously strong. A uniform factor of safety of 11 is employed throughout, except in those members which are subject either to violent shocks or extreme wear. In these the safety margin has been proportionately increased. Over-size wire cross-bracings have been employed to eliminate, as far as possible, the usual excessive elongations due to hard usage and the consequent need of adjustment and re-alignment of members, as is often necessary.

The Mayo military biplanes have been designed and constructed with especial attention to the rigorous requirements of military aviatric work. Simplicity and fewness of parts are outstanding characteristics, while rapidity of secure assembling, and dismantling, are other desirable attributes. Quick detachability has been sought wherever possible, consistent with absolute security. Four (4) heavy nickel steel pins serve to secure the main cellule to the fuselage, while the main plane struts and cables are likewise detachably anchored in substantial fittings with chrome nickel steel pins provided with safety chains.

The complete empennage consisting of non-lifting tail member, elevators, vertical stability fin and rudder, is locked in place by a novel arrangement which necessitates inserting and drawing-up on only three bolts. The chassis and motor-mounting design have been similarly treated. The tanks themselves are of greater capacity than is usual in machines of this type.

Other points in the design of Mayo Military Air-craft are that throughout the whole design load or compression members are not pierced to accommodate bolts or pins; nor is any welding whatever employed in the manufacture of the metal parts for these machines.

To safe-guard production, raw and finished materials were tested in the laboratories of the Sheffield Scientific School, Yale University, New Haven, Conn.

Mayo aeroplanes are constructed in one of the most up-to-date factories in America with every facility, mechanical and manual, for economical and rapid production in large quantities.

Specifications of the Mayo 90 hp. two-seater military biplane:—

Span O. A. ....	38' 0"	11.58m
Chord. ....	5' 6"	1.67m
Length O. A. ....	29' 6"	8.93m
Height. ....	10' 0"	3.04m
Wing Area. ....	374 Sq. ft.	33.73 Sq. m
Weight (empty) .....	1235 lbs.	456 Kg.
Useful load—Pilot, observer, plus 80 pounds for wireless equipment, fuel and oil tankage for four hours of flight.		
Flight speed (loaded)—82 M. P. H. (132 Km) maximum		
43 M. P. H. (69) minimum		
36 M. P. H. (156 Km) landing speed.		

Motor—90 H. P. Gyro rotary motor—7 cylinders.

4½" (114mm) x 6" (152mm).

Propeller—Mayo design, 8' 6" dia., two-blade type, laminated mahogany.

FUSELAGE—The fuselage is of special streamline design adapted to offer the least possible resistance at the flying speed of the machine. It is flat-sided in order to provide the vertical surface so necessary for good directional stability, but is crowned on the top side to eliminate eddies set up in the cock-pit section. The fuselage is built up of ash longitudinals with ash struts and cross-members forward and spruce in the rear. Special design steel fittings connect the various members, while the longerons are not pierced throughout their length. The whole assembly is well braced with special heavy imported wires and turn-buckles. The motor and fuel tanks are forward of the passengers' cock-pit and this section is covered-in with heavy aluminum sheeting. Aft the fuselage is totally enclosed with treated linen. Seats are arranged in tandem with the pilot located in the rear. The sides and back of each cock-pit are upholstered in leather and the seats are provided with simple means of quickly adjusting their height.

The fuselage is also built in two sections, if desired, a modified bayonet-lock system joining the two sections in assembly.

The super-crown, or wind-shield, is provided to deflect the air upwards from the passengers' faces and also serves to more completely stream-line the cowl.

WINGS—The wings are of the single unit type, built up over substantial ash main spars. The construction is exceptionally light and strong and is throughout of the very finest selected material. Main spars are not pierced to accommodate bolts or similar parts.

The aero-curve is a development to insure large lifting capacity together with a wide range of flight speed. The wings are provided with a moderate dihedral and other means of insuring maximum inherent lateral stability. The ribs are of special construction, rigidly secured to the spars and designed to carry only the load stresses. A separate system of internal wing struts and wire cross-bracing graduated with the loads, is provided to take all compression strains.

Upper and lower wings are separated by twelve struts of the most efficient design and the whole cellule is braced together with over-size stranded cables and corresponding turn-buckles.

Ailerons, hinged to each of the rear spars, are provided for maintaining lateral control. These members are actuated by concealed cables. The hinge gap and its excessive drag have also been eliminated by a unique detail in the wing design. This permits practically the same efficiency as warping and increases the speed several miles an hour over the usual construction.

The covering for all surfaces is a high-grade linen, treated with seven coats of Gallaudet aero varnish and given a high finish.

EMPENNAGE—The empennage consists of an adjustable non-lifting tail plane, semi-circular in plan, with dual elevator, flaps hinged thereto and a conventional vertical rudder. This latter control organ is fitted to an adequate vertical fin. The frames of these members are constructed entirely of heavy gauge steel tubing of large diameter and special cross-sectional shape.

Coverings are treated linen, sewn on. Quick detachable fittings secure the empennage to the fuselage. All control wires are of cable, in duplicate for safety.

CHASSIS—The landing chassis is of the usual wheel and skid type. Two ash skids are each supported by two heavy sectioned hollow strut members strongly cross-braced with cables fitted with Q. D. turn-buckles. Special wheels are employed, shod with 26x4-inch double tube tires. A small tail skid of ash serves to support the tail of the machine when on the ground. This skid is universally suspended, action controlled by rubber springs.

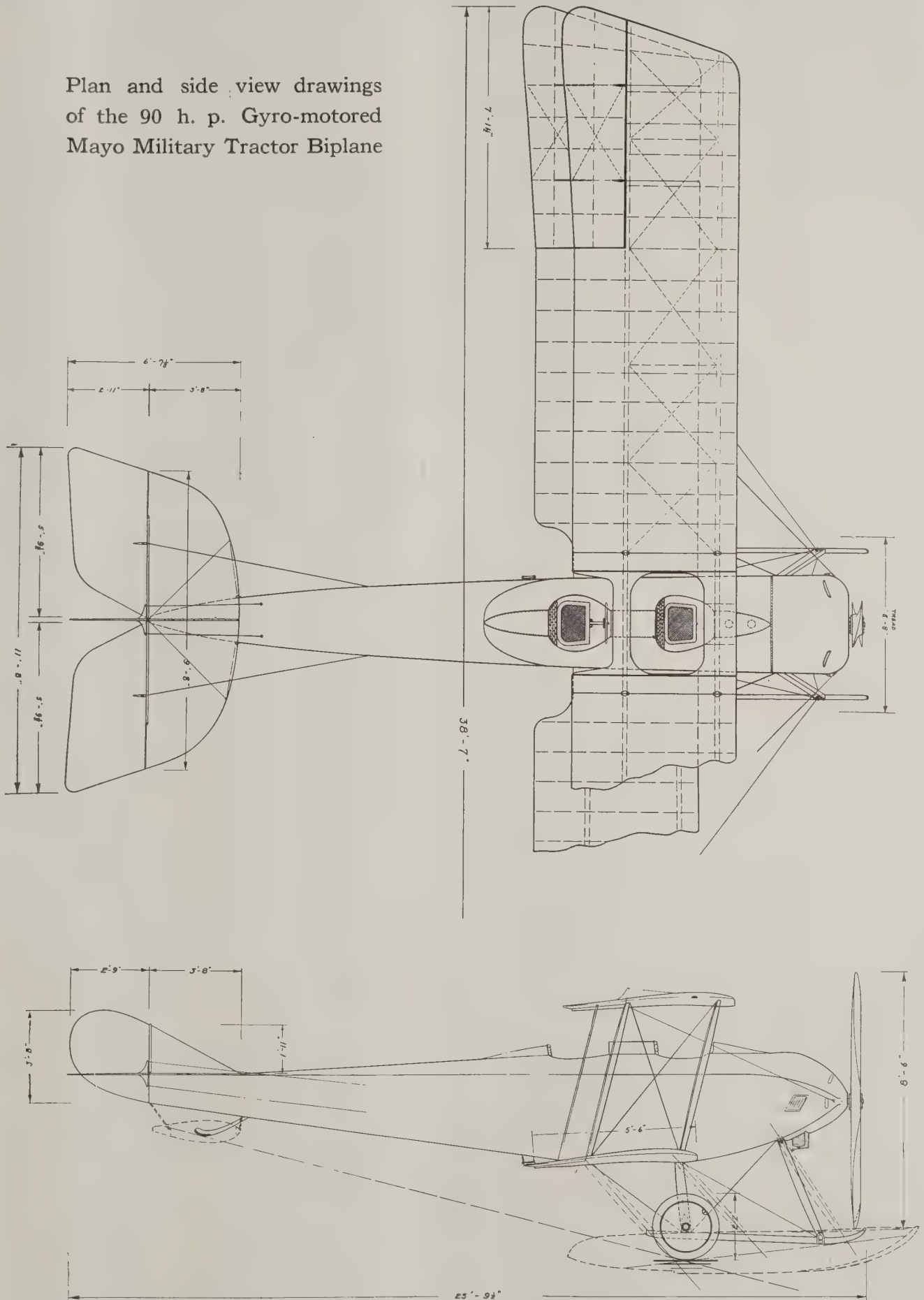
MOTOR—The 90 H. P. Gyro rotary motor is mounted on two steel beds rigidly secured to the longitudinals. The motor is efficiently housed against throwing oil in a hand-formed aluminum shield. A set of hand-lever controls, governing the speed of the engine is provided in the pilot's cock-pit, on the right-hand side, or on the control column itself if preferred.

PROPELLER—A Mayo design 8-inch x 6-inch propeller of the two-blade type is coupled direct to the crank-case extension of the motor.

TANKS—The main fuel and oil supply tanks are disposed in a separate compartment directly behind the motor. These are made of thin gauge steel and have a fuel and oil capacity sufficient for over four (4) hours of flight. Tank filler caps are provided with safety chains. Supplementary tanks are placed in the cock-pit.

CONTROL—The control is the standard DEP system of hand wheel and rudder bar.

Plan and side view drawings of the 90 h. p. Gyro-motored Mayo Military Tractor Biplane





# The Elements of a Gyrocopter

By Emile Berliner

Inventor and Perfector of The Telephone Transmitter,  
The Victor Talking Machine and The Gyro Motor

THE Gyrocopter is a variation of the helicopter operated by a rotary motor. Its special feature is a small anti-torque propeller taking the place of the usual second lifting propeller which in the past it was found necessary to provide in order to counteract the torque movement of the machine.

The following are the elements of the Gyrocopter:—

1. Lifting propeller L.
2. Motor M.
3. Anti-torque propeller T.
4. Frame work with platform P.

The propeller T is located 10 feet or more from the mainshaft S and its efficiency is approximately calculated to be equal to a pressure obtained by dividing the torque of propeller L with the distance a, b. The wings of propeller T can be shortened or lengthened by movable joints until the torque of L is counter-balanced. Any slight difference is neutralized by an ordinary rudder not shown in the drawing.

Another method of regulating the anti-torque pressure of T would consist in a movable shield directly in front or behind it which would reduce the latter's efficiency by masking the access of the air to this propeller. This device could be used as a rudder to the apparatus.

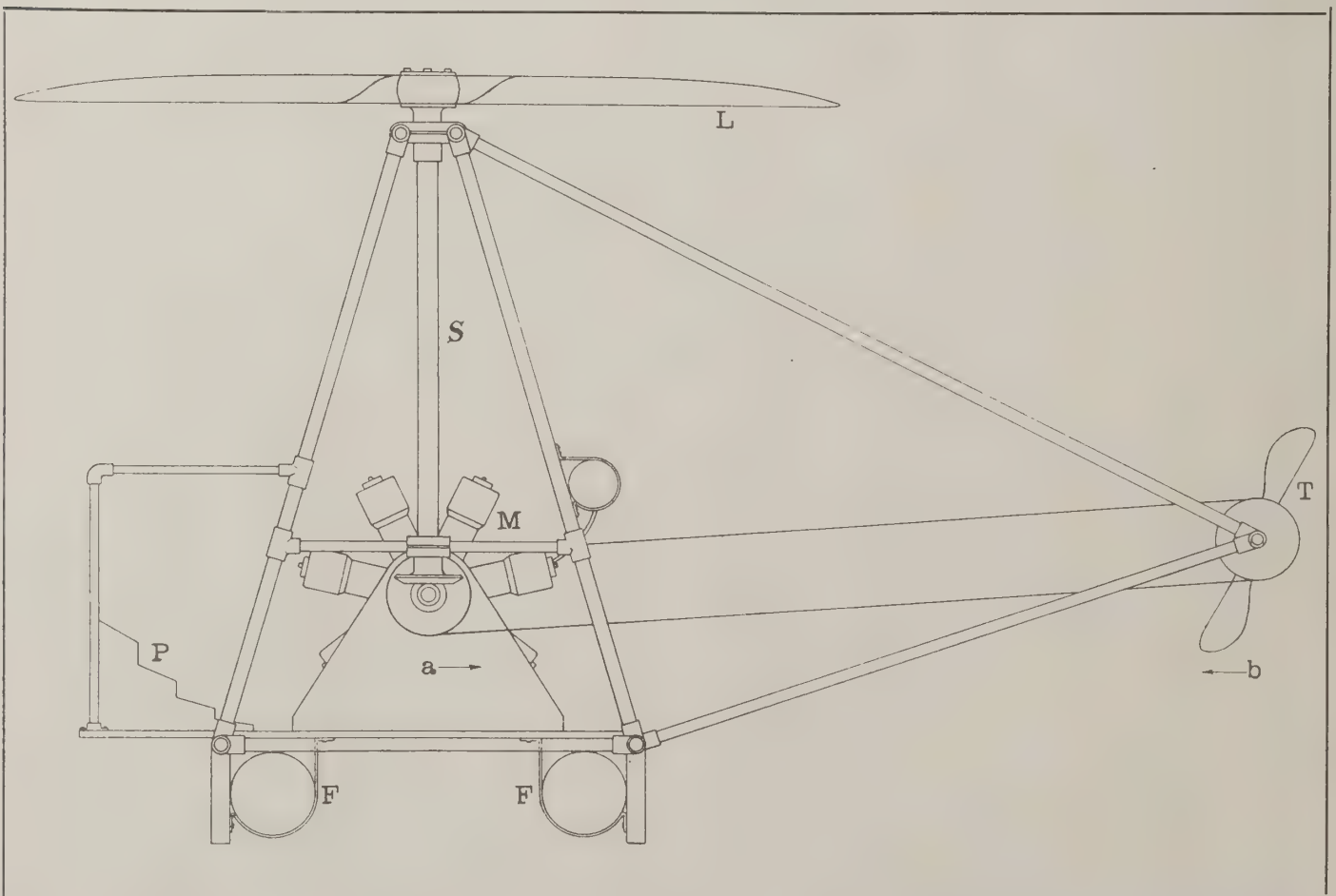
The Gyrocopter is propelled forward by tilting it. To do this the operator steps forward on the platform P and the apparatus will then move in the direction of the tilt. A tilt of 10 degrees will reduce the lifting power of L about  $1\frac{1}{2}$  per cent. and impart to

the whole machine a forward pressure equal to about 17-100 of the total lifting power. Supposing the latter be 1,000 pounds then with a tilt of 10 degrees the loss in lift will be 15 pounds and the forward pressure will be 172 pounds. With a tilt of 25 degrees the loss in lifting is about 10 per cent. and the forward pressure 44 per cent. of the total lift, and with a tilt of 45 degrees the loss in lifting will be about 30 per cent. and the forward pressure 70 per cent. of the lifting pressure.

From this it can be seen that by stepping forward or backward the operator can keep such a machine moving comfortably at any level, provided that the surplus lifting power (meaning total lifting power less weight of machine and operator) does not exceed about 1-5 of the weight of the apparatus. Within this limit the operator will have a tilting between, say, 10 to 40 degrees, for navigating the machine. It also becomes clear that the propeller L is to be designed for lift and not for speed as the latter develops from the tilting of an apparatus having small head resistance which can be reduced still more by a streamline enclosure.

The Gyrocopter is intended in its primary stages to fly close to the water and to float on it when at rest. Two hollow aluminum cylinders F F act as floats. Collapsible planes or parachutes might be added for modifying a fall from greater heights.

Preliminary experiments with a full sized apparatus anchored to the ground by ropes were begun over 2 years ago but were interrupted by work on the Gyro motor. It is the intention of the writer to resume experiments at an early date.





# MODEL NEWS

Edited by WALTER H. FHIPPS



## CLUBS

**THE AERO SCIENCE CLUB OF AMERICA**  
29 West 39th Street, New York City

**PHILADELPHIA MODEL AERO CLUB**  
2208 Brown Street, Philadelphia, Pa.

**PACIFIC NORTHWEST MODEL AERO CLUB**  
915 Ravenna Boulevard, Seattle, Wash.

**LONG ISLAND MODEL AERO CLUB**  
401 Grant Ave., Cypress Hills, L. I.

**BAY RIDGE MODEL CLUB**  
6730 Ridge Boulevard, Bay Ridge, Brooklyn

**CONCORD MODEL AERO CLUB**  
Concord, Mass.

**SUMMIT MODEL AERO CLUB**  
26 Shady Side Avenue, Summit, N. J.

**THE ILLINOIS MODEL AERO CLUB**  
Room 130, Auditorium Hotel, Chicago, Ill.

**MILWAUKEE MODEL AERO CLUB**  
402 Bradford Ave., Milwaukee, Wisc.

**CONCORD MODEL CLUB**  
c/o Edward P. Warner, Concord, Mass.

**AERO CLUB OF ST. LOUIS**  
Columbia Bldg., 8th & Locust Sts.,  
St. Louis, Mo.

**MODEL AERO CLUB OF OXFORD**  
Oxford, Pa.

It is the intention of the publishers of *Aerial Age* to promote interest in and encourage scientific model building and flying.

To this end there will be devoted a full page each week to Model News. It is hoped to make this department as instructive and interesting as possible and so wide in scope as to cover the activities of model flyers in all parts of the country.

All model flyers are urged to co-operate by sending in photographs, drawings or descriptions of new and original machines or devices, which they think would prove of interest to others. Address all matters pertaining to models to the Model Editor, care *Aerial Age*, 116 West 32nd St., New York City.

### Big National Model Aeroplane Competition Proposed

It is proposed to hold a big National Model Aeroplane Competition and Inter-Club Contest in conjunction with the National Aeroplane Competition for full-sized machines to start July 4th and end October 15th, 1915.

All model flyers and clubs are urged to co-operate by sending in any suggestions and recommendations they think will help in drawing up the rules.

### Aero Science Club Bulletin

By G. A. Cavanagh

Regarding the partially completed aeroplane now the property of the club, it was decided by vote to rebuild the machine in the form of a tractor biplane. Members are asked to send in their ideas as to the design of the machine which designs will not be received later than the meeting of May 22d, after which time the draughtsmen on the committee appointed will select the best designs from which they will abstract the final plans for the construction.

A special meeting of officers was called for Wednesday, May 5th, to draw up rules for the Aero Science Club Efficiency Contest to be held on July 4th. The result of this meeting will be published in the next bulletin.

The club adopted *Aerial Age* as the official organ which magazine will contain weekly the official bulletin and other interesting news relating to the Club and its members. A copy will be mailed weekly to all members of the A. S. C.

For further particulars, address the Secretary, George A. Cavanagh, No. 49 Lott Avenue, Woodhaven, Long Island, N. Y.

### Illinois Model Aero Club

On Saturday, the third in the series of the distance meets was held at Cicero Field. The meet was won by Mr. Ellis Cook, Charles Arens, second and Nealy, third. During the first two hours of the meet Cook was the only one who could make his machine stay up long enough for thousand-foot flights; later Nealy brought out his model and flew twice with distances of 1179 and 1900 ft. Cook's machine was badly controlled and made the 1600 ft. flying sidewise. Charles Arens succeeded in adjusting his model late in the afternoon and did some brilliant flying, but the wind had died down and long flights were impossible.

### The "Obst" World's Record Flying Boat

The C. V. Obst flying boat model illustrated in the accompanying photograph is the holder of the World's record for models of this type and the winner of the first model flying boat contest held in this country. It is one of the few flying boat models which has actually succeeded in rising from the water and making creditable flights.

Among the experienced model flyers to-day, the successful model flying boat is a machine which attracts more than the usual amount of interest. This is mainly because the flying boat model is still new and uncommon, the greater majority of enthusiasts never having attempted the construction of one.

But, though difficult in design, construction, and operation, the owner of a good aeroplane of this type is amply repaid for his experimental troubles and repairs in the graceful flying of the finished product.

To witness the start when the boat lifts itself to the surface, the rapidly increasing speed of skimming, and the gradual take off,

followed by a circular flight, and a graceful volplane, back to the lake where it alights with hardly a splash, is worth more than seeing any number of hand or R O G models.

The following description of the "Obst" boat will give the reader a good idea of what the flying boat model is like.

The main stick is spruce, 36 inches long and  $\frac{1}{2}$  inch square at the center, tapering towards the ends. The rear brace or propeller bar is  $8\frac{1}{2}$  inches long and is of bamboo. It is braced by two strips of bamboo running diagonally and the space thus formed is filled in with fibre paper coated with Avion varnish, thus forming a tail plane.

The upper main plane has a span of 29 inches with a chord of 4 inches and a dihedral angle of 165 degrees. The ribs, entering and trailing edges are of bamboo and the main beam is of spruce. The lower plane is constructed in the same manner except that it is rectangular in shape, and the balancing pontoons are formed on the ends of the plane. These pontoons are built up with veneer sides and covered with fibre paper which is given five coats of Avion. The span of this plane, including the pontoons, is 18 inches with a chord of 4 inches. The balancing pontoons are  $1\frac{1}{4}$  inches deep, and are attached so that they rest partly in the water when the craft is at rest. This is essential or otherwise the model will swerve completely around every time a slight gust hits it. The planes are separated by a box-like structure of bamboo strips, and are simply held thereon by rubber bands, so that either plane may be removed at will, without disturbing the position of the other.

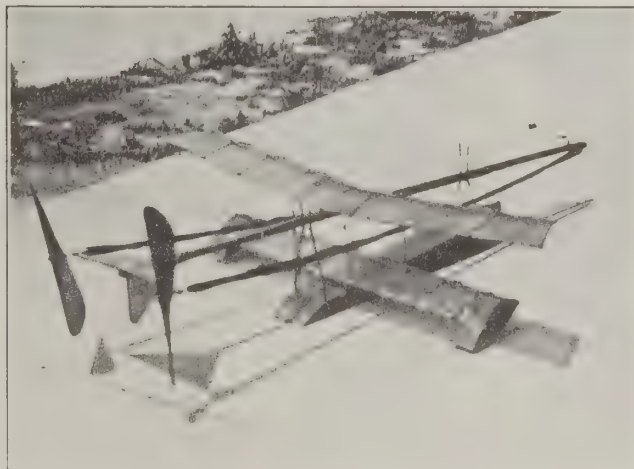
Situated under the tail plane is a small fin, constructed of bamboo strips and covered with fibre paper.

The boat is 18 inches long,  $1\frac{1}{2}$  inches deep,  $2\frac{1}{2}$  inches wide and has one step, situated about under the centre of pressure. The sides are of 1-32 inch birch and cross braces of birch forming eight compartments. It is connected by bamboo strips running up to the main stick and secured thereto by rubber bands which take up the shock of landing on the ground or water and prevents damage to the boat.

The boat, planes and fin are covered with fibre paper and treated with Avion model varnish, which draws the same taut and makes it water-proof.

The propellers are 8 inches in diameter, are fitted with bearings of tubing and are driven by fourteen strands of  $\frac{1}{8}$  inch flat rubber.

The model rises from the water after a run of about 10 feet and is a very stable flyer.



The C. V. Obst flying boat model which holds the World's record for a model of this type. Note how the main planes attach quite far back on the hull with the wing tip pontoons attached so that they touch the water. Also how the motor stick is inclined to keep the propellers above the water.





# Foreign News

Reported by L. d'Orcy and Robert Pluym



## Austria-Hungary

A report from Budapest states that three Russian military aviators were killed on April 27, when an aeroplane of the Sikorsky type was shot down by Hungarian troops near Szebel, southwest of Stryj, Galicia. The fourth occupant of the machine was taken prisoner.

## France

A dramatic duel in the air in which a German aircraft was brought down by Roland G. Garros, the famous French aviator, inside the allied lines, is described by Major Raoul Pontus, son of the one time Belgian Minister of War, who witnessed the combat. The German at first succeeded in rising above Garros' machine, but the latter, by a clever twist, escaped and then flew atop the German.

"From this moment the German's position became critical," said Major Pontus, "for Garros overtook him rapidly. Presently the cracking of a quick firer showed the Frenchman judged himself sufficiently near to take the offensive. Could the German escape? It seemed difficult, for Garros shot forward in great bounds, getting nearer and nearer, but the German observer used his carbine freely and it seemed that a bullet might strike the Frenchman.

"Suddenly a long jet of white smoke gushed from the German machine and then a little flame, which in an instant enveloped the whole aeroplane. Notwithstanding the extreme peril the pilot took to flight, but his effort to escape soon was converted into a horrifying downward plunge. The aeroplane, a mass of flames, struck the ground a score of yards from me, and a column of black smoke mingled with sheets of fire poured from the fallen machine.

"I ran to the aeroplane, which had fallen close to a ditch and soon put out the fire. The aviators, horribly burned, were dead when I reached them. The gasoline tank contained two bullet holes. The machine was marked No. 2, fortieth flotilla. Its six-cylinder engine was very heavy and this explained its rapid fall. The fire had spared instruments and military documents in thick leather cases. This interest booty was taken to general headquarters."

The tale of an exciting chase in the air and a battle at an altitude of more than 8,000 feet between a French aeroplane and a German Albatross machine, in which the French aviator was victorious, is related by Lieut. Chambre, the observer on the French machine.

The pursuit began at Rheims, according to Lieut. Chambre, and lasted until the aircraft reached Chalons, an approximate distance of twenty-five miles. The Germans used over 100 quick fire cartridges without doing further damage than to pierce the wings of the French machine. The eleventh shot fired by the French aviators caused the German aeroplane to fall, and on reaching the ground it caught fire. The German officers escaped injury and were taken prisoners.

An official statement issued in Paris on April 16 says:

"A German aviator dropped bombs on the hospital at Mourmelon. By way of reprisal for the bombardment of Nancy by a Zeppelin, one of our aeroplanes dropped five bombs on the German headquarters. All the projectiles fell on the buildings in which the Imperial Staff were installed at Mezieres and Charleville.

"We also bombarded the station of Freiburg im Breisgau.

"Finally, a flying squadron of fifteen machines dropped bombs, with complete success, on the German military buildings at Ostend. Our aeroplanes were violently cannonaded, but all returned unscathed."

The French War Office's note of April 17 reported the following aerial activity: "Our aviators were very active. Ten bombs were thrown on the workshops of the railway station of Leopoldshöhe (in Baden), east of Huningue, which were being used for the manufacture of shells. Ten bombs were dropped on the powder magazine at Rothwell. Six struck the mark, and a huge red flame shot up, surrounded by a dense smoke. The aeroplanes were struck by shell splinters, but returned safe and sound.

"Forty bombs, most of which struck their mark, were dropped on the central electric station of Maizieres-les-Metz, fifteen kilometres (about ten miles) north of Metz. This station supplies the town and forts of Metz with power and light. Much smoke arose from the central building.

"On their return our aviators encountered three aviators, to whom they gave chase, forcing them to land. Our squadron suffered no mishaps, although subjected to a violent cannonade from the Metz forts."

The French official bulletin issued on April 28, contains the following:

"On April 28 one of our aeroplanes dropped six projectiles on the hangars of the Zeppelin dirigibles at Friedrichshafen. The aviator observed clouds of smoke rising from the roof of one hangar. Twenty-one shells have been dropped on the station, the bridges and a factory at Leopoldshöhe (Baden). During this bombardment one of our aeroplanes fell within the German lines.

"During the course of the day four German machines were pursued and reached by our aviators. One fell ablaze within the lines of the enemy near Brimont. Two others came to the earth near our trenches—one in Champagne and the other in the region of Ancre—and were destroyed by our artillery. The fourth fell within our lines at Muizon, west of Rheims. The two German aviators, who were not wounded, were taken prisoners."

The French War Office reports that on April 27 French aviators launched thirty-two shells on the station at Bollweiler, (seven miles north-northwest of Mulhausen,) and sixty on the station at Chambley, where they set fire to a depot of munitions.

The station of Arnville (on the Lorraine frontier) and the junction of the railways of Chambley and Thiaucourt have been bombed at night.

The city of Nancy was again attacked on April 28 by a German aeroplane. Three bombs were dropped and three persons were killed.

During the second battle of Ypres allied aeroplanes successfully bombarded the railway depots and junctions of Tourcoing, Roubaix, Ingelmunster, Staden, Langemark, Thielt and Roulers.

The French communiqué of April 30 states:

"One of our airships has bombarded the railroad and sheds in the region of Valenciennes. One of our aeroplanes, which was destroyed by an explosion, fell inside the enemy's lines."

(French official notes of late have quite often referred to the activity of French airships. This may be due to the recent completion of a number of powerful and large-sized dirigibles, such as the *Tissandier*, the *Pilatre-de-Roziers* and others.)

## Great Britain

German aircraft have resumed their raids upon English towns. On April 30, in the early morning, a hostile aircraft, believed to have been a Zeppelin, appeared above several Suffolk towns and dropped a number of explosive and incendiary bombs. Five houses were destroyed and three badly damaged at Ipswich, while three houses were set afire at Bury-St. Edmund. No fatalities were recorded.

In the afternoon a Taube visited Suffolk County, but it was chased away by two British machines, which went aloft in pursuit.

At 6:30 o'clock of the same day, a squadron of four Zeppelins travelling south was sighted by coast guards off Wells, Norfolk.

They were closely watched for some time, and were then seen to turn in toward land, going quite near to the coast. Then suddenly they turned to sea and when last seen were some distance over the water.

At 9:45 o'clock the four airships were again seen, this time above Lowestoft, but no bombs were dropped by the foe.

(This is the ninth authentic report of a German air raid upon England. The preceding raids are in chronologic order as follows:

Dec. 24, 1914.—A German aeroplane drops a bomb on Dover Castle. No damage.

Dec. 25, 1914.—Three German seaplanes appear over the Thames but are routed by British aeroplanes. No bombs were dropped.

Jan. 19, 1915.—Three Zeppelins raid nine Norfolk towns, principally Yarmouth and the royal residence of Sandringham. Five persons were killed and a score injured.

Feb. 21.—An unidentified aircraft drops bombs on Braintree, Colchester and Marks Tey. Material damage only.

March 18.—Two German aeroplanes bombard the naval and aerial base of Sheerness. No damage.

April 14.—A Zeppelin raids the Tyne district aiming probably at New Castle. About fifty bombs were dropped but no great amount of damage done.

April 16.—Two Zeppelins drop a dozen bombs on East Anglia towns. Most damage done at Lowestoft, where a lumber yard is set afire and one woman is injured.

April 17.—Two or three German seaplanes appear over Kent but are driven off by British aeroplanes. A few bombs were dropped.)



A 150 h.p. Benz motored centre-float Albatross seaplane of the German Navy, being launched at Wilhelmshafen.

Machines of this type are actively co-operating with Zeppelins in the aerial blockade of the British Isles by raiding coast towns and bombarding merchantmen found in the "war zone."

Courtesy of "Flying"





Aeronitis is a pleasant, a decidedly infectious ailment, which makes its victims "flighty," mentally and physically. At times it has a pathologic, at times merely a psychologic foundation. It already has affected thousands; it will get the rest of the world in time. Its symptoms vary in each case and each victim has a different story to tell. When you finish this column **you** may be infected, and may have a story all of your own. If so, your contribution will be welcomed by your fellow **aeronuts**. Initials of contributor will be printed when requested.

## FLIGHTY NOTES

If every man of means and enterprise could be made cognizant of the fact that an aeroplane within easy gliding distance of a safe landing is not a menace to the pilot or passenger if the motor inadvertently stops, aviation would be advanced at one "coup" to a commercial basis.

We like to brag about the Wright Bros., Curtiss and others who have put Aviation into history, but it is the foreigner who builds them monuments and buys their products.

Great Britain has about 4,000 licensed aviators attached to the military, each of which has received a grant of about \$375, or its equivalent, for obtaining the license. Yet so far we have heard only from about 50. Real flyers cannot be made in a few months.

Representatives who refuse to insure our national safety by voting the money for the premium should be slated for the sacrificial first line of defense in case of an unexpected attack.

We were ready to take George Benton, the popular manager of the new Savannah Hotel, for a flight recently. As he took his seat George nervously kicked off his shoes.

"What yer taken yer shoes off for, George?" shouted a Hurrah Boy.

"In case I have to swim," he replied.

"Yer don't hafter ditch yer shoes," shouted a small boy, "yer want ter get out yer wings."

We'll take our press flowers now.

The man who wrote "Pride goeth before a fall" probably had a prophetic vision of an aviator inspecting his machine by proxy.

This is a short one, but . . . .  
"Some of the French movies of actual fighting are to be taken from aeroplanes with a new kind of camera that is regulated to take automatically *three pictures of every mile covered.*"  
Some achievement, eh?

Some of the aviation reports we get from abroad read as follows:  
"As a retaliation to the outrage committed by (excise by Censor) while they were (delated by the Censor), the Minister of War has directed the (excise by Censor) to carry out the measures which have been adopted by the (delated by the Censor)."

Fortunately enough the Censor happened to be a humorist, for he leisurely added by pencil: *If I wanted to be mean, I'd cut out the whole blessed report.* (L. O.)

## Beechisms

If a private individual accepted money on the same terms as the Patent Office frequently does, if we may judge by a description of some patented aeronautical devices, he would be condemned to death for using the mails to catch fish. You know the variety.

During a banquet given in honor of the French aviators who came for the Gordon-Bennet Cup race in '12, one of the Frenchmen on being called on for a speech rendered the following: "I expecte zee speech to make. I étais désolé because zee parole in Anglais ees verra difficile. Mais, I learn zat zee men of zee press write zee speech for cinq dollaire. Eh bien, I go zem to see. Malheur. Zey were all busy, très occupé. I meet not weez zee succes, zey tous say me zee same zing: 'Mon. McCormick, he geev zee grand banquet to-night, et all zee invités expect zee call for zee speech and we write zee speech for zem.'"

No, Gwendoline, calling a street car an aeroplane will not make it fly.

Manager, anxiously regarding the changing expression on his aviator's face as the latter worked on his balking motor: "Ladies and gentlemen, will you kindly stand beyond the fence, the aviator wishes to talk intimately to his motor?"

Fleatown Courier:—

Rube Muggins' patent self-opening and closing gate don't work to suit him, so he's going to make it into a flying machine. Rube don't know yet whether it will be a monoplane or an airyo-plane.

Heard in the Hangar: Lady's voice:—"What happens when an aviator runs out of gasoline when in the air?"

Mecano, with rough-shod sarcasm: "Hush, lady, that is a forbidden subject in a hangar, because all the aviators who have run out of gas in the air are there yet, nobody can get any to them and they are starving to death."

Lady: "What do you call the man who attends to your aeroplane?"

Aviator: "I regret, but I never use profanity in the presence of a lady."

Is the Government contracting the Mañana Habit?

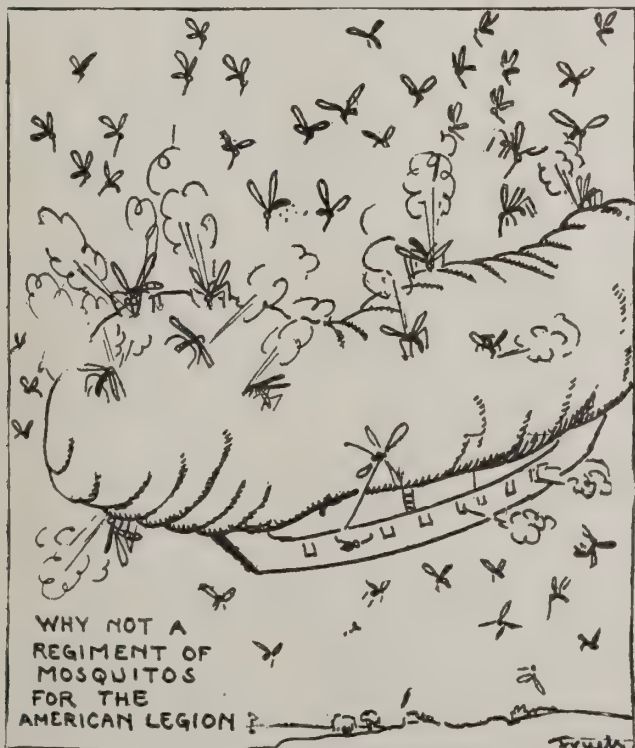
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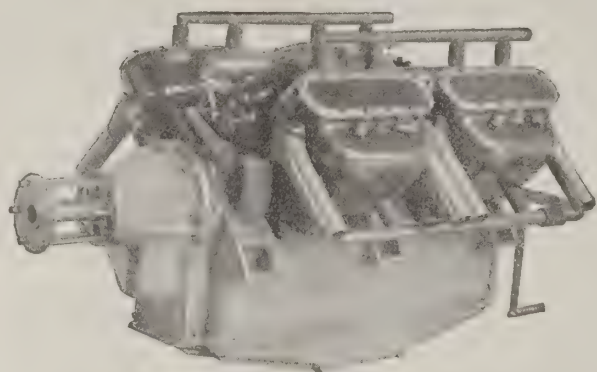
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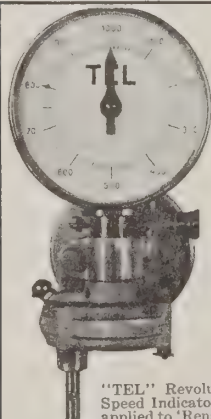
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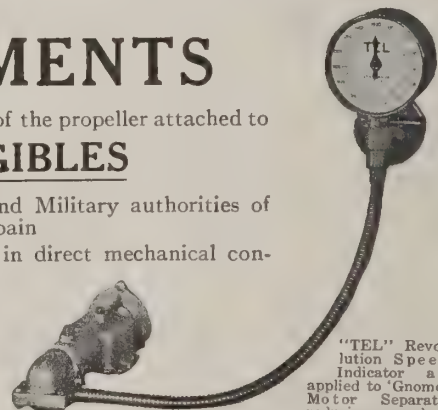
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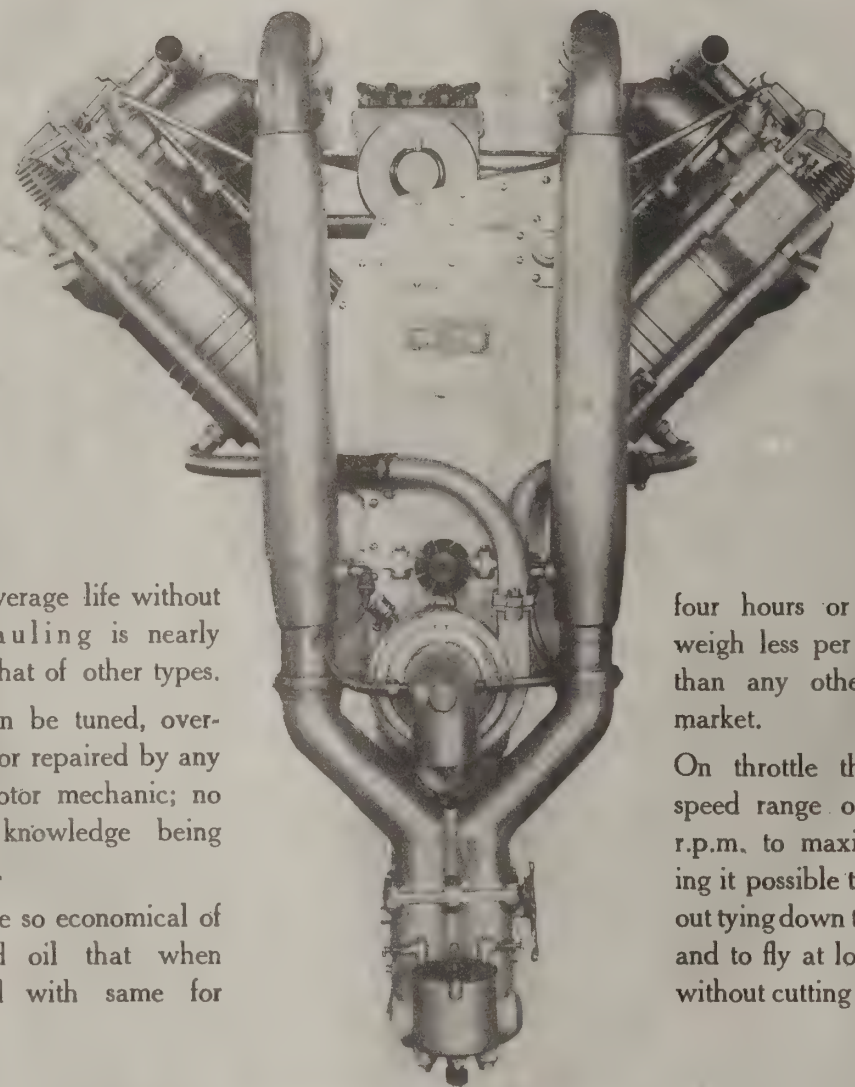
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## WEEKLY

Vol. I. No. 9.

MAY 17, 1915

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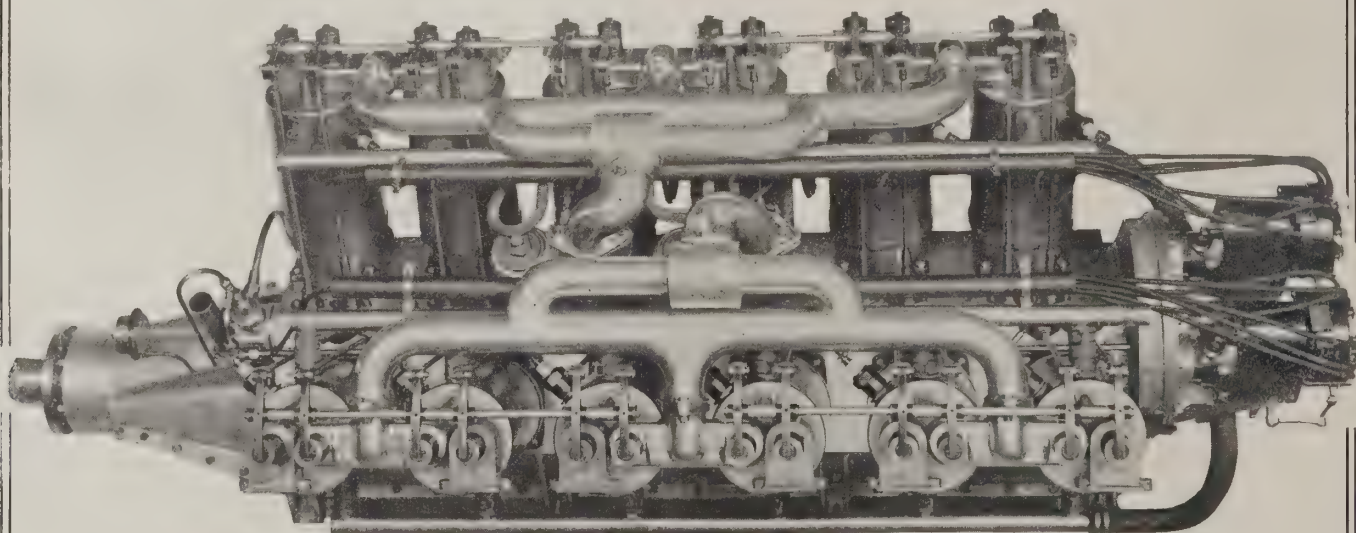
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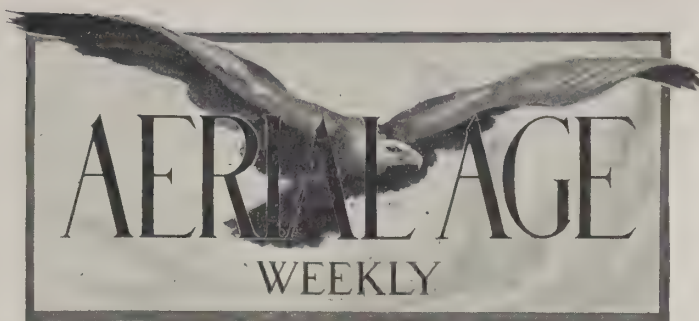
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PUBLISHED WEEKLY BY THE AERIAL AGE COMPANY, Inc., 116 West 32nd Street, New York City

Entered as Second-Class Matter March 25, 1915, at the Post Office at New York, N. Y., under the Act of March 3, 1879

VOL. I.

NEW YORK, May 17, 1915

No. 9

## How Russian Aeroplanes Keep Coast Free of Raiders and Protect Shipping

**C**HARLES C. WITMER, the American aviator, late pilot of Mr. Harold F. McCormick's aeroyacht, arrived in New York last Sunday from Russia, where he was for six months with the Black Sea Fleet. Upon his return to America, Mr. Witmer called at the Aero Club of America and in an interview with one of the editors of *Aerial Age* said, in part:

"If the British Government had employed the same methods that the Russians have put into effect to keep the Black Sea coast free of German vessels, the *Lusitania* could not have been destroyed.

"Since the time the *Breslau* and the *Goeben* threatened Sevastopol the Russians have been depending entirely upon aircraft to keep the coast free of sea raiders. Every day of my three months' stay in Sevastopol I saw the aeroplanes leave for a reconnaissance trip that would take them fifty miles out to sea. Seven aeroplanes were used for this purpose, and they searched a fifty-mile strip of the ocean daily, at intervals, looking for German submarines and cruisers—which, by the way, did not venture near after one experience had taught them a lesson.

"One morning, one of the air scouts brought back the information that the *Goeben* and the *Breslau* were making for the port, and were then only a few miles distant. The order was immediately given for the seven flying boats to 'take the air,' each carrying two forty-pound bombs. While the order was being executed, a shell from the *Goeben* came shrieking between the two rows of hangars, but fortunately did not explode. The hangars are located near the wireless station, which is close to the entrance of the railroad tunnel. The purpose was undoubtedly to wreck the tunnel, and thereby paralyze the railroads. The second shell struck back of the hangars, too far back to do any damage, and forty others were fired as the cruisers moved out of the harbor, before the aeroplanes could start. The shells all fell short of their mark.

"Then the seven flying boats—all of American make, delivered just before the outbreak of the war—started, and circling over the two steamers as they proceeded in full retreat under full steam out of the harbor, dropped their bombs and hurried back to shore. This manoeuvre was carried out without a flaw, but while the machines were returning to shore for their second load of bombs, the cruisers had gained too many miles to make further damage by the dropping of bombs possible, so the aeroplanes returned to shore after a long chase. Just how badly the cruisers were damaged has never been ascertained, but it is a fact that neither of them ever returned.

"After that initial success, the defense of the entire coast was left to the aeroplanes, and for three months, during my stay at Sevastopol, I saw them go out daily to reconnoiter. In this way, Russia was able, with an equipment of seven aeroplanes, costing about \$100,000, to dispense with the services of several cruisers and to insure ample protection to Sevastopol from the German sea raiders.

"The employment of a few aeroplanes on the Irish coast would have saved the *Lusitania*. Their daily reconnoitering would have prevented submarines from coming nearer than fifty miles to the coast, beyond which danger line the *Lusitania* would have had little to fear. As a matter of fact, there is little excuse for that tragedy except that they did not have sufficient aircraft to afford protection for ships under all conditions, which is undoubtedly the reason proper aerial protection to shipping near the British coast has not been provided, as it has in the Black Sea.

"When the need of aerial protection far from the coast became evident, the Russian authorities took the two fast steamers built for the trade between Odessa and Egypt, fitted them with false decks fore and aft for launching and receiving aeroplanes,

and sent the two ships with seven aeroplanes each, to afford the aerial protection needed. These steamers are capable of a speed of twenty knots an hour and seven aeroplanes can be snugly accommodated on each. The machines are launched by lowering them to the water with cranes, and taken aboard the same way. After a little practice, this can be done very quickly. I saw seven aeroplanes launched and in flight fourteen minutes after the order was given.

"On one occasion, when the Russian Fleet bombarded the Bosphorus, six aeroplanes, each equipped with two forty-pound bombs, were launched within fifteen minutes from one of the aeroplane ships. Forty minutes later they commenced to return to the ship for more bombs. They landed on the lee side of the ship, took their loads—a bomb on either side of the machine, connected to the releasing device, and soared aloft."

### Aeroplane the Periscope of Battleship

Mr. Witmer states further that aeroplanes are as necessary to battleships as periscopes are to submarines, and he was shocked when told that the Atlantic Fleet of sixty-two vessels, now assembled in New York waters, has no aeroplanes. When told that the Navy, who up to a month ago had three or four machines, but which, on account of three of them having been discarded because they were worn out and because the other had been wrecked a few days ago, he was utterly surprised, and almost as much shocked by that fact as by the news of the sinking of the *Lusitania*.

"With my mind filled with the proof of the potentiality of the aeroplane, I must confess that I am shocked by this utter neglect of aeronautics. It seems incredible that our great Navy should not have aerial scouts.

"Every military and naval authority in Europe now recognizes that a Navy without aerial eyes is as helpless as a submarine without a periscope; an army without aerial scouts can be corralled and slaughtered like a herd of sheep; a harbor or naval station is at the mercy of every puny submarine and cruiser, and a Nation without aerial forces is as helpless as was the *Lusitania* at the time of her sinking."

## Air Patrol Would Have Saved *Lusitania*

(By Henry Woodhouse, Governor Aero Club of America and Managing Editor of *Flying*, in the *New York Times*)

**T**HE small investment of \$20,000—the cost of two aeroplanes, would have saved the *Lusitania*—the terrible loss of life—and an actual loss of over ten million dollars.

The fleets of the warring countries have been and are daily protected from submarine attacks by the seaplanes, by their thorough reconnoissances, and it has been found that they can detect submarines and mines and thereby keep the path of the fleets clear. This has been the case in the North Sea and during the campaign against the Dardanelles.

All the British troops that have gone from England to France have been convoyed across the English channel by seaplanes and dirigibles and so effective have the aircraft been that not a single mishap has been recorded from the time of the sending over of the first drafts of the expeditionary forces up to the present time.

The present days' seaplanes are the most effective means of defense that a ship can have.

Two submarines have already been destroyed by the bombs of seaplanes and Sir John French and Vice-Admiral de Robeck have expressed their regret that they can barely get enough aeroplanes for scouting and directing artillery fire and cannot, therefore, employ some to extend the potentiality of ships and keep the coasts clear of hostile craft.



With two aeroplanes the Lusitania would have made itself immune from submarine attack. The danger from submarines is a daylight danger near coasts, and this danger would easily be overcome by the employment of aircraft, as already mentioned.

The powerful seaplanes of to-day have been called the King-fishers of the submarine. They can be launched from a ship and sent to reconnoiter a hundred miles ahead and upon finding a submarine it can attack it with bombs, and destroy it. The heads of the different forces in Europe recognize this potentiality and while regretting that they do not have sufficient aeroplanes to employ some for this purpose they keep their submarines out of reach of the enemies' aircraft.

All the European powers are now regretting that they did not pay attention to the developments of the torpedo launching seaplanes which would make it possible for every unarmed ship and transport to protect itself against the attacks of not only submarines, but also of torpedo boats and cruisers.

Torpedo launching by aeroplane is a new development not yet practiced in the war for the reason that the powers need aeroplanes in large numbers for other purposes and cannot allow their constructors and officers the time required to construct larger machines and conduct experiments to make it possible to launch full sized torpedoes. But the feasibility of launching torpedoes with aeroplanes has been demonstrated by experiments made by Captain Alessandro Guidoni, Royal Italian Navy at the arsenal at Spezia, Italy, and advocated in the United States by Rear Admiral Bradley A. Fiske, U. S. N. But the possibility of obtaining better results than are obtainable from a torpedo boat costing \$1,000,000 with an aeroplane costing only about \$15,000 has seemed too preposterous to be taken seriously by the bulk of naval authorities and neither of the above mentioned officers received considerations until a few months ago. Captain Guidoni has succeeded in launching torpedoes weighing 700 pounds and hitting the target nine times out of ten from a distance of one and a half miles. When torpedo planes are put in use the status of things in naval warfare will change.

A small gunboat now terrorizes the whole section—nothing can reach it, not worth sending a ship. A torpedo plane from a steamer or station would be ample to deal with it. Again a large steamer is now at the mercy of a small gunboat. With two torpedo planes on board it would be quite beyond trouble—it rather could make trouble for the gunboat. Another instance, an impudent little gunboat sails to the entrance of a port, blockades it, and prevents the run of commerce. The torpedo planes would deal with it.

If the Lusitania was torpedoed within ten miles of the coast the British authorities may be twice sorry for not having paid attention to the warnings of Sir Percy Scott, who warned England of the coming potentiality of the submarine and the aircraft. Had she paid heed to the warnings to-day she would have a sufficient number of aircraft, and every port of her coast, as far as twenty miles out at sea, could be kept clear of submarines and mines.

However, this failure to provide aerial protection was not confined to England. Naval authorities have been slow in recognizing the value of aircraft, and as a result few countries had more than a handful of aeroplanes when the war was declared and it required such events as a dirigible halting a ship at sea; a squadron of aeroplanes attacking a cruiser with bombs, a fleet of seaplanes starting from hangarships at sea to attack military bases; a seaplane launching torpedoes—to make them realize the value of aircraft for naval warfare. These events marked a new stage in the development of naval aeronautics and show clearly the advent of a new epoch, a period when the ships of the sea must face a new and potential adversary; when transports equipped with torpedo launching seaplanes will be a match to armored warships, and naval battles and the side winning in the future will have a preponderous advantage over the other.

Until now navy people, trained to face the crushing force of the elements have looked at the frail aeroplane askance and asked for the supreme test, seaworthiness, before admitting it as a naval auxiliary. Without seaworthiness they could not see any usefulness for the aeroplane and, accordingly, postponed the organization of naval aeronautic corps.

True, England and Germany started to organize a substantial naval air service some months before the war, but their plans were by no means adequate. Nations spending hundreds of millions in naval equipment failed to supply adequate aerial protection to their investment—they failed to supply means to extend the striking power of their navies over land just as they failed to supply the means to extend the potentiality of their armies over water, by supplying aeroplanes and dirigibles in large enough number to permit the employment of some for work of defensive and offensive nature.

The obstacle that has prevented the development of naval aeronautics more than anything else has been the obsession of naval men that an aeroplane to be of service to the navy should have the staunchness of a ship. With extreme lack of sense of proportions they have failed to realize that what they expected

in an aeroplane costing about \$10,000 and requiring only a personnel of two men was so revolutionary in efficiency afforded for the amount invested that judged by the same standard a dreadnought would represent an unjustifiable waste of money as the cost of a dreadnought and the personnel required to man it is more than is required to establish and operate a fleet of five hundred aeroplanes.

The fact that the fleet assembling in New York waters has not a single aeroplane at its disposal and, on account of the discarding recently of three of the four naval aeroplanes which had become unfit for service the UNITED STATES NAVY HAS ONLY ONE AEROPLANE FIT FOR SERVICE, shows that the United States has not profited by Europe's mistakes. With one aeroplane in the Navy, half dozen in the Army, and none of the 150 civil aviators experienced in long distance flying, this country would be in a sorrowful plight in case of its becoming a party in a war.

## Aircraft versus Submarine

THE gradual development of aircraft in connection with naval warfare has reached a new phase.

The Great War has furnished thus far numerous examples of how dirigibles and seaplanes can be used for scouting in advance of a fleet, for detecting concealed land batteries and submerged mines, for attacks upon naval and aerial bases.

Now comes a report so momentous in its importance for the future development of naval warfare that it might well mean the dawn of a new era, which should considerably revolutionize methods of naval strategy and thereby entirely change the aspects of sea-power.

The report referred to, issued by the German Admiralty, reads as follows:

"On May 3 a German naval airship had an engagement with several British submarines in the North Sea. Several bombs were dropped from the airship, one of them hitting and sinking one of the submarines. The airship was bombarded by the guns of the submarines without being hit. It returned safely."

It is hard to realize at the first glance the whole magnitude of the above report.

The submarine has proven a terribly active foe in the present war, one whose deadly efficiency is particularly due to the difficulty of its detection and destruction. A submarine in action is silent, elusive and for the greater part of time invisible for ships afloat. Its destruction can be brought about only by destroyers whose speed exceeds that of the fastest submarine by about ten knots and affords them only a limited chance to overtake the submarine and ram it or shell its periscope before the latter can dive. When entirely submerged, the submarine is practically safe from any attack but perhaps for the contact with a mine.

But if the dirigible and the submarine can be developed into a fighting machine—and this is being attempted abroad—the submarine is liable to meet ere long a foe that may cut down its potentiality to a great extent.

Indeed both dirigible and seaplane, but more so the latter, possess two features that give them a marked advantage over the submarine. One is superior speed; the other is "deep sea vision."

Superior speed, say 75 miles per hour for the seaplane against possibly 20 knots for the submarine enables the former to overtake the "under-sea boat" in just half the time it requires a destroyer to do this and doubles therefore the chances of destroying the submarine while emerged.

"Deep-sea vision" afforded by the seaplane is an even more valuable asset for fighting a submarine than is superior speed. Deep-sea vision enables the seaplane to detect a submerged submarine to a depth of about 100 feet in very transparent waters such as are found in the Mediterranean or in the Caribbean Sea; in the Northern Atlantic the visible depth is more limited. It generally varies according to the color of the sea-bottom and of the sky.

The possibility of detecting submarines by means of a seaplane reconnaissance has obviously an immense importance for the safety of a fleet, for it eliminates to a great extent the deadliest danger ships of the line have to cope with in time of war. Whereas the submarine cannot launch a torpedo without getting its bearings, *i. e.* without showing its periscope above the water, it should be an easy matter for a seaplane to follow the course of a submerged submarine and attack it with bombs at the very moment the periscope pops out of the sea. And the submarine will be the more defenseless as it cannot detect the seaplane, for present day periscopes have no visual range in the vertical; and also owing to the fact that the submarine can bring into play its anti-aircraft guns only after its complete emersion.

The seaplane could therefore effectively attack the submarine before the latter had a chance of opening the hatches that house its disappearing guns; and as such an attack could be carried out from a very low altitude, the submarine should have a very slight chance to escape unscathed.



# THE NEWS OF THE WEEK

## Looping Pilots Get New Aircraft

De Lloyd Thompson has been in New York several days arranging for a new tractor biplane of the type designed by Charles Day, formerly of Chicago, which is to be built for him by the Aircraft Company, of this city. The noted looper, formerly flying partner of the late Lincoln Beachey, finds that there is so much demand for the hair raising feats of aviation that he is giving no attention to contests. He will use, as he did last season, an 80 h.p. Gyro motor. Thompson was the first to fly upside down in this country with a passenger. His plucky companion was the wife of Barney Oldfield, the automobilist. Thompson for several months last year held the American altitude record, having ascended 15,600 feet last August.

Charles F. Niles will also be ready in a few days to open his looping season with a monoplane. He is waiting for a new passenger carrying machine that is being completed for him at Hempstead. Beachey's manager, "Bill" Pickens, has just become associated with the Niles interests as press agent. Niles, like Thompson and "Art" Smith, has no end of exhibition engagements offered. The Beachey-Oldfield team last season is said to have made net profits of \$230,000.

## Two American Aviators Take French Licenses

The Aero Club of America received to-day from the Aero Club of France information of the passing of their tests for certificate by two American citizens—Mr. Jules Bach and Mr. Elliot Cowdin. Copies of the reports of the trial flights of the aviators were forwarded requesting the formal sanction of the Aero Club of America for the granting of certificates by the French Club.

The tests of the newly certificated pilots were in both cases carried out at the Aerodrome de Pont Long on Anzani motored Bleriot machines. The observers were: Capitaine Collard, Chief pilot of the Military School and Lieut. Binda, assistant Commandant.

Mr. Jules Bach is an engineer with permanent address in Paris, while Mr. Cowdin is listed as a manufacturer of New York.

The prescribed tests governing the issuance of pilot certificates as set forth in the regulations of the Federation Aeronautique Internationale, are recognized by all the aero clubs affiliated with

the Federation. Hence an aviator qualifying in any one country is equally proficient, at the time of issuance of his certificate, with a certificated pilot of another country.

## A. C. Beech Races Fast Motorboat

A. C. Beech who has been delighting thousands with his fine flying at Savannah, Ga., recently treated pleasure seekers at the Isle of Hope to a race between his flying boat and a fast motorboat.

Challenged by J. A. G. Carson, Jr., with his racing motorboat, the Rosa, Beech gave the watching thousands their first opportunity of seeing a race between a water craft and a flying boat. Twice he baited the plucky little racer on for a short distance, then took the air and left her far in the rear. With the motorboat's maximum speed of twenty-five miles an hour against the flying boat's sixty miles, interest in the race was entirely in the novelty of it. Three thousand people enjoyed the exhibition.

According to an announcement in the Elyria, Ohio *Telegram* an aviation meet will be held at Lorain, Ohio, May 28th and 29th, in which several aeroplanes constructed by the Lorain Aero and Hydro Co. will participate.

The program of aerial manoeuvres will include demonstrations of tactics used by the airmen in the European war and will include exhibitions of bomb dropping.

## Dallas to Have Aviation School

According to a story published in a local paper recently, three Dallas men have leased sixty acres of ground and formed a corporation to establish an aviation training school. The incorporators are named as Paul Van de Velde, Currie McCutcheon and Lester Miller.

## Baxter H. Adams Considering Giving Vincennes Three Days of Flying

Baxter H. Adams is considering Vincennes for a series of flights this month. He has been exhibiting in Henderson, Ky., and Hopkinsville, Ky., and has Paducah, Ky., Indianapolis and many other cities booked for this season. Mr. Adams is in correspondence with the fair association for the use of the grounds and should he decide on going to Vincennes his exhibition will be given in the grounds.

## The Aerial Ferry

By Felix J. Koch

"Had your morning ride on the sky-ferry, yet?" Jack Roosa greets you, as you meet on one of the avenues of the big exposition at San Diego.

Of course you have;—everybody has;—and so you begin to exchange experiences.

That's to say, one Roger Jannus is conducting an aerial ferry between San Diego and Coronado. Anyone can ride who has the price,—and this is quite reasonable, indeed.

Just the other day, Gov. Emmet D. Boyle, of Nevada, established the record as the first state-executive to ride in this flying-boat,—travelling over to the Mexican line and then out to sea, as well.

"A Nevadan looks down on the rest of the world anyway!" said the Governor, discussing the journey,—but, rest assured, many states quite as important, have been sending patrons to ride on the hydroaeroplane, and come back from their "looking down on the world." The picture shows Boyle comfortably seated in the air-ship, with Jannus about to climb into the driver's seat at his side.







Aviator and Mrs. Geo. A. Gray

### Ensign Stoltz Killed

Ensign Melvin L. Stoltz, of the Navy Aviation Corps, fell to his death on May 8th while making a low altitude flight at Pensacola, Fla. The report states that his skull was fractured when he fell from the aeroplane, head first, while making a vertical dive. Details of the accident are not available.

The young officer was killed instantly.

Surgeons made efforts within ten minutes after the accident to revive him, but were unsuccessful.

Ensign Stoltz was born July 29, 1888, and was appointed to the Naval Academy from New York in 1906. He served with the aviation detachment, which did scouting work at Vera Cruz during the American occupation.

### Flying Boat in Accident

The flying boat built by Burgess for Vincent Astor, which was getting its final tests before shipment to New York, figured in an accident on May 7th.

Clifford Webster and a mechanic, Richard Karman, were

returning along the shore from Nahant, and as they were crossing the Causeway from Marblehead to the Neck the motor developed trouble. They were up only seventy-five feet at the time, else they would have been able to land in the water.

Webster succeeded in clearing the iron railing on the harbor side of the Causeway, but the pontoons caught on the cement wall on the other side and the machine turned over.

### CICERO NOTES

The week-end flying activities of Cicero Field are increasing. Saturday, in spite of a very windy day, Hensel's Wright and Pallissard's tractor went up for good flights. Sunday, Pallissard himself took the school machine up 5 times in a light rain.

Mr. Couch, who has been recoating and assembling his tractor biplane, will soon have the machine ready for its summer dates.

Cicero and the Aero Club of Illinois were represented in the gigantic prosperity parade held in honor of Chicago's new Mayor. Mr. Laird's aeroplane decked out in bunting, proved an attractive float.

### OHIO NEWS ITEMS

#### Toledo, Ohio

"Tony" Jannus has signed a contract with the Toledo Railway & Light Co. to have one of his flying boats at Toledo Beach for two months beginning July 1st. Daily exhibitions will be given and passengers carried.

#### Cedar Point, Ohio

The Lorain Aero Co. will have a new flying boat at this resort, beginning July 4th. Passengers will be carried from the point to Sandusky, Putin Bay and nearby island resorts.

#### Cleveland, Ohio

Dr. H. A. Young has secured the right to carry passengers from the new municipal pier on the Lake front at Cleveland, O. A new Wright flying boat will be used and a daily service established between Cleveland, Rocky Kuer and Euclid Beach Park.

#### Lorain, Ohio

The Lorain Aero Co. has the contract to give exhibitions and carry passengers during the week of June 12th, when the Eagles will hold their state convention at Lorain.

#### Conneaut Lake, Pa.

A flying boat (Jannus make—Roberts motor) has been secured for the season and will commence operations July 1st.



One of the 160 H. P. Model K Curtiss Flying Boats supplied in large numbers to foreign governments by the Curtiss Aeroplane Co.



## Garden City Notes

Saturday last was an ideal flying day. The air was somewhat bumpy near the ground, but higher up atmospheric conditions were perfect.

There were quite a number of automobile parties on the field, who had come there in the hope of seeing extensive flying. But the big war orders received by several of the constructors kept pilots so busy on supervising the rushed construction of aeroplanes, that much to their regret they could not indulge in pleasure flying.

Still, in order not to disappoint the aero enthusiasts who had come down to the field to see at least one machine aloft, Harold Kantner decided to take out his rig, the smart Gyro-powered Huntington tractor and show them what it could do.

He first went up with Mr. Blair Thaw, the younger brother of William Thaw, who now holds a commission in the French Aviation Corps, and circled the field several times, going up as high as 1,800 feet. His getaway was extremely rapid and his all round handling of the machine beautiful. This was especially noticeable in the descent and the alighting.

Kantner's next passenger was Mr. C. P. Requa, of 2 East 84th Street, N. Y. C., who had never before been up in an aeroplane and showed keen interest for his new experience. Kantner flew with him in wide sweeps over the country, climbing steadily to about 1,800 feet and putting the rig through its paces for all it was worth. The descent was made in a perfectly steady volplane with the motor shut off, which well bore out the extraordinary gliding capacity of the Huntington tractor.

Mr. Requa proved extremely enthusiastic about his first flight, and it is rumored that he will soon break into aviation in a more tangible way.

Then Kantner took up Ladislas d'Orcy, foreign editor of *Aerial Age*, who had flown as a passenger in a great number of foreign made machines and showed therefore much eagerness to compare their qualities with those of a machine "Made in U. S. A."

To quote his own words:

"Kantner called me and I crawled into the cockpit. First agreeable impression: it is comfortable (how different from the old time canvas-and-bamboo seats!)

"Then the mécano spins the propeller and off we go. Second and third agreeable astonishment: the motor runs just as smooth as a Gnome (here I must confess that I had doubted so far whether America could produce a good rotary motor); there is no vibration to it and the cockpit is well sheltered against the propeller draught.

"Next my interest centered in pilot and machine. I hope not to hurt Kantner's modesty by saying that he handles his machine beautifully. There is quite a number of good pilots in the world, but not so many handle a machine naturally, *i. e.* by just letting her fly and driving her like an automobile. Kantner is one of these. When flying his face is just as pleasant as on the ground; there is no strain about him and he will turn about and chat with you just as if we were sitting in the trophy room of the Ae. C. A., and not soaring 2,000 feet high above other mortals. As to the flight qualities of the machine . . . well, I guess if I keep on it will look like a free advertisement; but I must say this, that nowadays, when practically every soundly built machine is an all-round good machine it is rather difficult to incorporate a far outstanding quality. What particularly struck me in the Huntington machine, was its exceptional gliding. Why that machine does not glide, it floats and it looked to me as if it would stay aloft indefinitely, had not Kantner forced her down by gentle persuasion."

On Wednesday the field witnessed the greatest flying of the season, there being no less than four machines up at the same time.

Heinrich, in the 110 h.p. Gyro-motored Heinrich tractor essayed a four-hours' test which he accomplished in three flights, flying on the first test over two hours before alighting. This trip was followed by two others, one of one hour and 5 minutes, the other of 50 minutes.

Millman flew the Gallaudet, and the speedy little Schmitt monocoque carrying Tony Jannus and Lieut. Carberry as passengers on the former.

Kantner and Gilpatric added to the day's activities by flying almost continuously so that there was hardly a minute when machines were not to be seen in the air.

Probably two hundred interested spectators viewed the aviation events at the Garden City aerodrome last Sunday. John G. Gilpatric was out early in the afternoon in the Sloane military tractor, and made two lengthy flights. This was more than "Tex" Millman could stand, so he brought out his speedy little Schmitt monoplane and did some of the most beautiful banking that has been seen at the aerodrome in a long time. At one time, on a straight-away, Millman's indicator testified to the fact that he was going at the rate of 82 miles per hour.

Albert S. Heinrich carried several passengers, among whom were two ladies and William Slavens McNutt, the novelist.



Aviator and Mrs. Albert S. Heinrich

Mr. McNutt, who is working on an Arctic novel in which aeroplanes play a leading part, said to Burt M. McConnell, formerly of the Canadian Arctic Expedition, who is collaborating with him, in answer to the question—"How does it feel?":

"Imagine the most keenly pleasurable sensation you ever experienced," he said, "intensify it a hundred per cent.—and then go up yourself and become convinced that you were far short of imagining the indescribable ecstasy of it. The thing that astonished me most was that I had none of the sense of fear I always experience when standing near the edge of a high cliff or a bridge or a building. On these occasions I am subject to disagreeable chills of the most acute sort, and have the instinct common to so many to topple over the edge, but I felt absolutely none of that while up with Mr. Heinrich. It was clarified pleasure, unalloyed by even a hint of the painful constriction I always feel when standing on a high eminence. There was no confusing vibration while we were in the air, and I was agreeably surprised at the smoothness of both the flight and the landing. We bowled along the ground with less jar than one usually feels in an automobile on a fairly smooth road. Mr. Heinrich surely is a master aviator. It's simply great to be able to swim through the air at the rate of 70 miles an hour, and now I want to own and operate a machine. I'm going to get rid of the car. There are no traffic cops in the air, no lamp posts to skid into, and I feel safer up there than I do either afoot or in a car on Broadway. Oh, I'm a 'bug,' all right."

## Art Smith Makes Record Number of Loops at Fair

Art Smith, the Fort Wayne aviator, has made a new record, which now puts him in a class by himself. Flying near the spot where Lincoln Beachey fell to death at the Panama Pacific exposition at San Francisco a few weeks ago, Smith looped the loop twenty-one times, breaking the world's record. In telling of this wonderful feat a San Francisco paper says:

"There was no enthusiasm when Smith started. The crowd watched anxiously and it was relieved to see Smith get safely away. He waved his arms in the manner of the late Lincoln Beachey as he swept low over the crowd and went on straight up into the sun. Three times he circled over the exposition until he had reached an altitude of almost 5,000 feet. And then just as the crowd had made up its mind that he was determined to fly safe without any fancy work Smith began to loop. Twenty-one times he swung around in the loop, each loop not more than a circle of 150 feet and every one painted on the sky by a pencil of gray smoke. Beachey had never done more than seven loops."

## Hudson-Wright Aero Company, Incorporated

The Hudson Wright Aero Company, Inc., Manhattan; \$4,500; D. F. Gaines, A. B. Gaines, Jr.; H. Charle and two others; Spooner & Cotton, No. 14 Wall street.

The Harriman Motors Co., of South Glastonbury, Conn., is building a reinforced concrete assembling shop which will be completed in about a week.

Mr. Nels J. Nelson of New Britain, Conn., has joined the engineering force of this company, and expects to turn out at least two complete aeroplanes and about six engines a month during the coming year.



## The 1915 Jannus Flying Boat

By Walter H. Phipps



WHEN a flyer has had so much practical experience in handling flying boats as Antony Jannus, it was only natural to expect that any machine that he would bring out would be particularly adapted for its work.

It was not surprising then that the tests of the new Jannus flying boat proved so successful and bore out the many features he had aimed for. Designed for rough water use, ready assembly and disassembly, a large degree of inherent stability, wide range of flying speed, water-proof construction of wings, large margin of safety, comfort for pilot and three passengers, and a dry, clean place for them to sit in, this new craft more than filled his expectations.

The rough water ability is obtained in two principal ways, first, by the great freeboard and other points in the design of the hull, and second, the low center of gravity. Of special interest are the tapering end floats that are nicely designed and never pound or jerk the wings. These taper from three inches wide across the bottom to a foot across the top. The taper has the advantage of reducing the planing surface which at high speed would be sufficient to pound the wings badly, but when called upon as floats, are quickly displacing water at an increased rate easily combating the heaviest side lurching or listing, or yawing tendency.

The removability of the tail for shipment has many advantages in construction, and in simplicity of shipment for compactness, the motor remains in the front half of the hull with all controls intact. The control cables going to the tail and rudder all pass through individual leads in a conduit that is made of heavy steel as a protection against the propeller breaking or throwing anything with sufficient force to sever them. Between the conduit and the controls the cables are supplied with the Jannus Type sister hook which locks the cables together in a permanent fashion quickly, and without additional safety wire or other auxiliary being necessary.

The wings are assembled in their entirety before being attached to the hull and, when on, cannot fail to align properly, if reasonable care is taken. Where desirable they can be put on half at a time but this would only be of advantage if hangar space, or other limiting factor, made it impossible to assemble all at once. All the wing attachments are independent of the motor

and propeller shaft so that any punishment of one is not transmitted to the other. No matter what rough seas may strain the wings the motor and propeller shaft do not change their alignment. No matter how severe the missing of the motor or other trouble that might occur the flying equipment cannot be wrecked thereby.

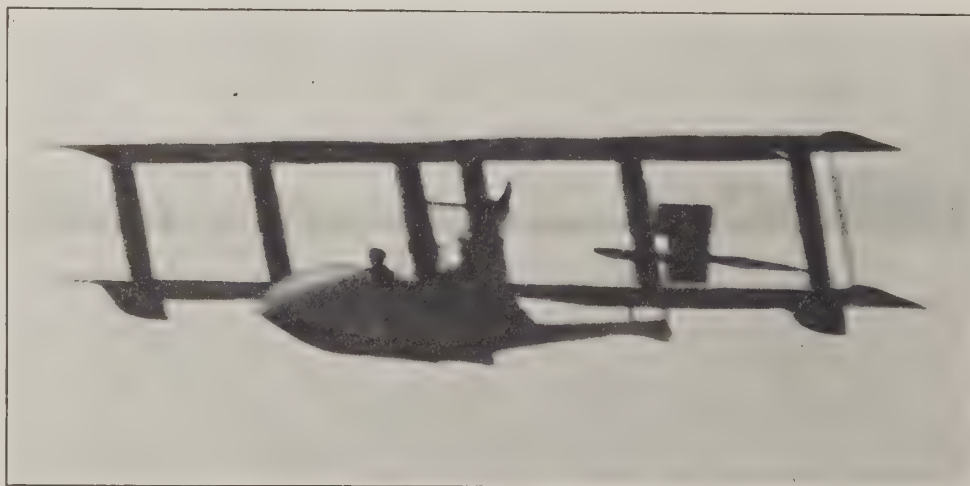
The strut construction and other considerations for clean lines, and reduced head resistance, have resulted in a flying boat operable on very low power. To date the best record shows a total load of 2,200 lbs. carried in flight at 30-55 m.p.h. with an indicated 60 h.p. With full power it will exceed the useful load specifications for this model.

Tests in the lee of large vessels, along windward shores, and in other extreme conditions of gusty wind and treacherous obstacles, prove that the new struts and the staggered planes are serious contenders for the inherent stability honors. The pilots reported that in no case was there any rapid inequality developed nor did the machine make any appreciable variation from its course due to these unfavorable conditions.

The tests have been conducted by Mr. Fritz G. Ericson and Mr. Antony Jannus. To Mr. Ericson the Jannus Brothers' Company state they are very deeply indebted both for the encouraging way in which he learned to fly last fall, while a pupil of Roger Jannus, and for the way in which he has been able to apply his highly developed training as a designer and inventor, to this particular science. At home he is noted for his early connection with motor boats and later automobiles and iceboats. As the inventor of the Ericson four-cycle reversible motor, the first heavy duty marine gasoline engine to spring into use in the world, he dates back rather far in the evolution of the applications of the internal combustion engine. During the entire winter, with both the Jannus Brothers rather active in other parts of the country than Baltimore, Mr. Ericson has worked steadily on the development of the new Jannus boat.

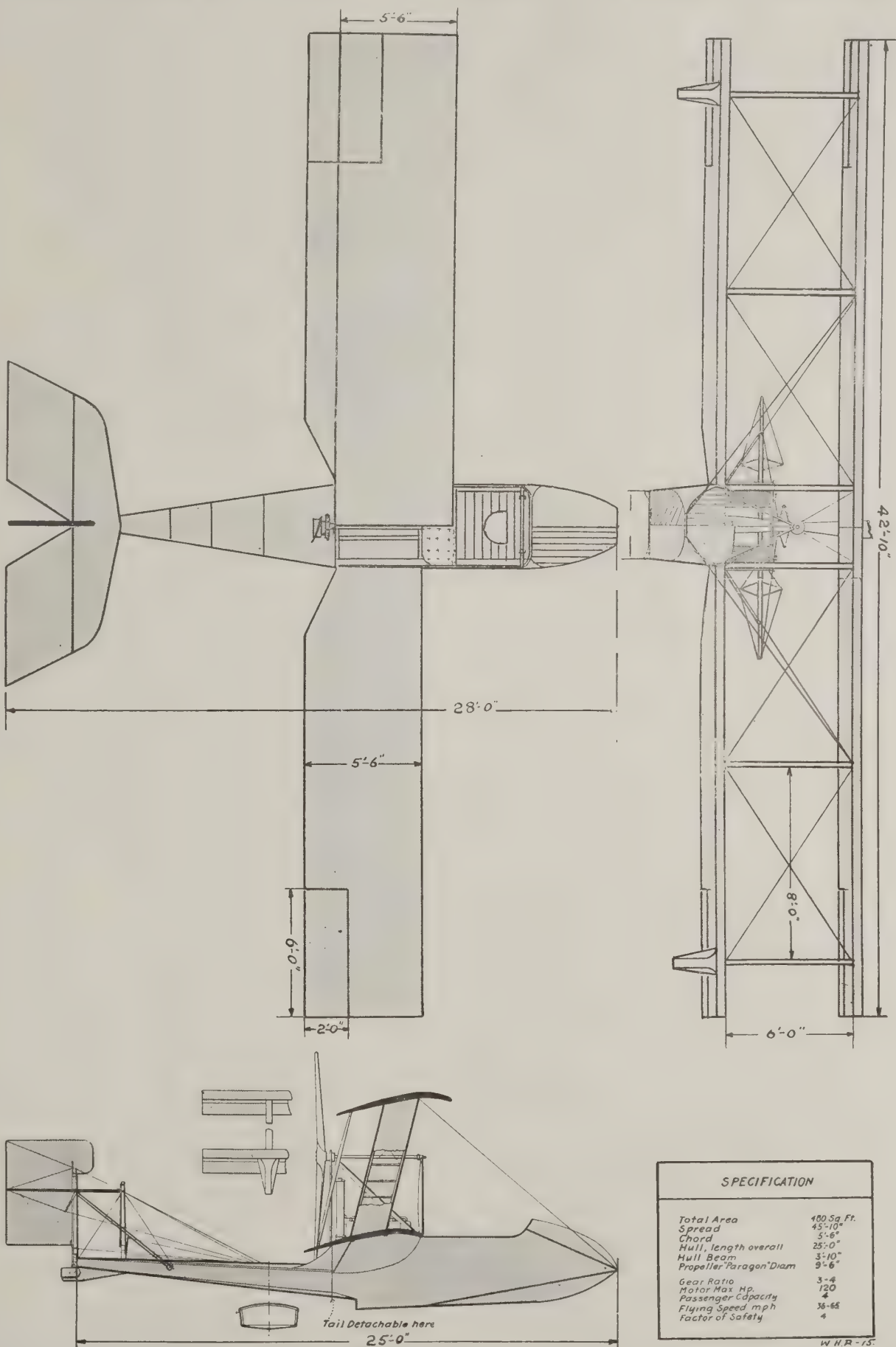
The designers did not stagger the planes in this model for other than structural advantage, although this practice is credited with considerable improving effect. The design is intended to produce inherent stability through the proper construction and

(Concluded on page 208)



The new 120 h. p. Maximotored Jannus flying boat in flight at Baltimore, Md. Note the capacious hull, the staggered planes and their covered-in struts.

Scale Drawings of the 120 h. p. Maximotored Jannus Flying Boat.





## NATIONAL DEFENSE AND THE NA

RECENT events, which have made the nation take stock of its general resources, have brought out the fundamental value of the National Aeroplane Competition. With need for at least three hundred aeroplanes, but only less than ten in service in the Army and Navy, the nation needs badly a reserve of trained civil aviators. But as there has been nothing done to induce long distance flying, only half a dozen of the hundred and fifty licensed aviators who either have or can get aeroplanes have made flights of fifty miles across country, and would not be ready to render the valuable services expected of them in case of need. And the National Guard and the Naval Militia have not had any experience with aeroplanes.

We appreciate now the fundamental value of the Competition, which is to be held throughout the country under the auspices of the Aero Clubs of America, with the co-operation of the states, and cities, Military and educational institutions, and sporting, scientific, and business organizations of the United States to assist the War and Navy Departments in developing aviation corps for the National Guard and Naval Militia, to demonstrate for the Post Office Department the practicability of carrying mail by aeroplane to hundreds of places so isolated that it now takes days to deliver mail that could be delivered by aeroplane in a few hours, to develop the sport and to demonstrate the practicability of the aeroplane for general use.

Popular interest will be accompanied by support and participation, and that will result in meeting the aeronautical needs of this country. In making these plans, special consideration was given to the need of creating aeronautical corps in connection with the Naval Militia and the National Guard, and to introduce the aeroplane for mail-carrying purposes—this last with a view of supplying aerial mail carriers as well as creating an aeronautical reserve which might be used every day for peaceful purposes and be of great value in case of need.

The problem of providing officials to time aviators in different parts of the country has been solved in a most admirable way. Some six hundred automobile clubs and associators and six hundred yacht clubs and associations will co-operate, and no matter where an aviator may start from or land at he will be properly timed and assisted.

Following is the list of automobile clubs and associations co-operating:

## Alabama

O. J. Griel, Pres., Alabama State Auto. Assn., Montgomery, Ala.

## Arizona

E. Power Conway, Pres., Arizona State Auto. Assn., Phoenix, Ariz.; Jos. H. Gray, Sec'y., Arizona State Auto. Assn., P. O. Box, 119, Bisbee, Ariz.; J. S. Ebert, Pres., Borderland Auto. Club, Tucson, Ariz.; J. E. Owen, Sec'y., Borderland Auto. Club, Tucson, Ariz.; G. P. Bullard, Pres., Maricopa Auto. Club, Phoenix, Ariz.; T. G. Norris, Pres., Prescott Auto. Club, Prescott, Ariz.; Gordon Clark, Sec'y., Prescott Auto. Club, Prescott, Ariz.; J. R. Henderson, Pres., Warren District A. C., Bisbee, Ariz.; J. H. Gray, Sec'y., Warren District Auto. Club, Bisbee, Ariz.

## Arkansas

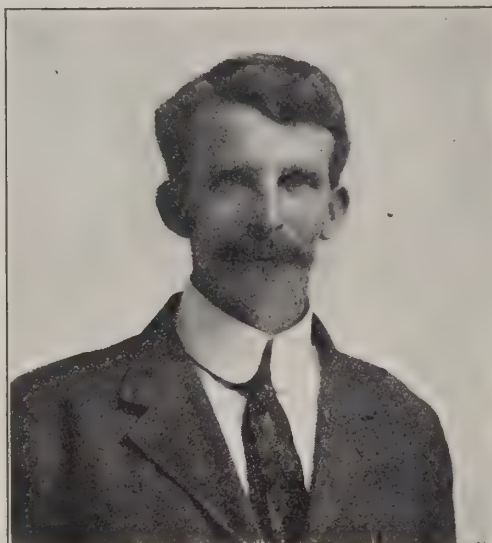
B. J. Terry, Pres., Arkansas City Auto. Club, Arkansas City, Ark.; J. Bernhardt, Sec'y., Arkansas City Auto. Club, Arkansas City, Ark.; J. Walter Gillette, Pres., Ft. Smith Van Buren A. C., Ft. Smith, Ark.; N. B. Sparks, Jr., Sec'y., Ft. Smith Van Buren A. C., 711 N. 12th St., Ft. Smith, Ark.

## California

P. J. Walker, Pres., California State A. A., Monadnock Bldg., San Francisco, Calif.; B. E. Watkins, Sec'y., California State A. A., 1628 Van Ness Ave., San Francisco, Calif.; F. L. Baker, Pres., Automobile Club of Southern California, Baker Iron Works, Los Angeles, Calif.; S. L. Mitchell, Sec'y., Automobile Club of Southern California, 730 So. Olive St., Los Angeles, Calif.

## Colorado

Carl Ph. Schwalb, Pres., Denver Motor Club, Denver, Colo.; Chas. F. Roehrig, Sec'y., Denver Motor Club, Denver, Colo.; G. H. Chorlton, Pres., Durango Motor Club, Durango, Colo.; Jacob G. Wellson, Sec'y., Durango Motor Club, Box 1144, Durango, Colo.; F. O. Vaille, Pres., Inter Mountain Country Club, 405 Chamber of Commerce, Denver, Colo.; S. L. Newcomb, Jr., Sec'y., Inter Mountain Country Club, 405 Chamber of Commerce, Denver, Colo.



A. C. Beech



Geo. A. Gray

## Secretary Daniels Appreciates Val

NAVY DEPARTM

Dear Mr. Hawley:

Your letter of April 15, and also one plane Competition, have been received.

I am very much interested in the aero arranging for. It should meet with the s be very glad to give my support in any wa the names and addresses of all the aviators

At the present time, I have no sugges fully covered the subject. If anything sho to make suggestions in the hope of renderi

I desire to thank you and the Board c mitting the proposition to me, and I want

Mr. Alan R. Hawley,  
Chairman, Contest Committee  
Aero Club of America, New York City.

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# IONAL AEROPLANE COMPETITION



W. Leonard Bonney



J. Hector Worden

## the National Aeroplane Competition

WASHINGTON, D. C.

May 7, 1915.

April 17, 1915, in regard to the National Aero-

competition that you and the Aero Club are  
s that your earnest efforts deserve. I would  
at is possible. I would be very glad to have  
participate in the Competition.

to make, because it seems that you have so  
occur to me in the future, I would be very glad  
ne assistance.

vernors of the Aero Club of America for sub-  
sh you every success.

Very truly yours,

(Signed) JOSEPHUS DANIELS,

Secretary of the Navy

### Connecticut

Capt. C. H. Wickham, Pres., Auto Club of Hartford, Hartford, Conn.; A. Fifood, Sec'y., Auto Club of Hartford, Hartford, Conn.; N. D. Holbrook, Pres., Litchfield Co. Auto. Club, Thomaston, Conn.; L. P. Case, Sec'y., Litchfield Co. Auto. Club, Winsted, Conn.

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### Florida

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### Georgia

Judge O. T. Bacon, Pres., Savannah Auto. Club, Savannah, Ga.; A. W. Solomon, Sec'y., Savannah Auto. Club, Savannah, Ga.

### Idaho

J. T. Carruth, Pres., Bingham Co., A. & G. R. Assn., Blackfoot, Idaho; John H. Early, Sec'y., Bingham Co., A. & G. R. Assn., Blackfoot, Idaho.

### Illinois

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### Iowa

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### Kansas

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Bourbon Co. Auto. Assn., Fort Scott, Kans.; Dick Hays, Pres., Chase Co. Auto. Club, Cottonwood Falls, Kans.; Geo. E. Gilaspie, Sec'y., Chase Co. Auto. Club, Cottonwood Falls, Kans.; Dr. D. F. Morgan, Pres., Clay Co. Auto. Assn., Clay Center, Kans.; Geo. H. Dorn, Sec'y., Clay Co. Auto. Assn., Clay Center, Kans.; J. W. Hanlen, Sec'y., Cowley Co. Auto. Assn., Winfield, Kans.; J. T. Nicolay, Pres., Dickinson Co. Auto. Assn., Abilene, Kans.; J. A. Tufts, Sec'y., Dickinson Co. Auto. Assn., Abilene, Kans.; Edward Heeney, Pres., Doniphan Co. Auto. Assn., Severance, Kans.; C. M. Finley, Sec'y., Doniphan Co. Auto. Assn., Troy, Kans.; W. E. Spalding, Pres., Douglas Co. A. & G. R. Assn., Lawrence, Kans.; O. H. McQuary, Jr., Sec'y., Douglas Co., A. & Gd. Rd. Assn., Lawrence, Kans.; Col. F. D. West, Pres., Edwards Co. Auto. Assn., Kinsley, Kans.; Lee Hardy, Sec'y., Edwards Co. Auto. Assn., Lewis, Kans.; O. S. Myers, Pres., Elk County Auto. Assn., Moline, Kans.; Roy Bates, Sec'y., Elk County Auto. Assn., Moline, Kans.; E. C. Waldo, Pres., Ellis County Auto. Assn., Ellis, Kans.; R. T. Payne, Sec'y., Ellis County Auto. Assn., Ellis, Kans.; J. M. Conard, Pres., Franklin Co. Auto. Assn., Ottawa P. O., Kans.; Ralph Pleasant, Sec'y., Franklin Co. Auto. Assn., Ottawa P. O., Kans.; Dr. C. C. Cheney, Pres., Greenwood Co. Auto. Assn., Eureka, Kans.; J. F. Darby, Sec'y., Greenwood Co. Auto. Assn., Eureka, Kans.; W. R. Morrow, Pres., Independence Auto. Club, Independence, Kans.; Walter Campbell, Sec'y., Independence Auto. Club, Independence, Kans.; S. S. Linscott, Pres., Jackson County Auto Assn., Holton, Kans.; Kendall M. Haas, Sec'y., Jackson Co. Auto. Assn., Holton, Kans.; M. S. McCreight, Pres., Jefferson Co. Auto. Assn., Oskaloosa, Kans.; W. O. Worswick, Sec'y., Jefferson Co. Auto. Assn., Oskaloosa, Kans.; Dr. W. W. Spencer, Pres., Jewell Co. Auto. Assn., Mankato, Kans.; N. M. Fair, Sec'y., Jewell Co. Auto. Assn., Mankato, Kans.; Chas. M. Morris, Pres., Johnson Co. Auto. Club, Olathe, Kans.; C. McCown, Sec'y., Johnson Co. Auto. Club, Olathe, Kans.; Charles Gist, Pres., Leavenworth Co. Motor & Gd. Rds. Assn., Boling, Kans.; G. F. Dohrn, Sec'y., Leavenworth Co. Motor & Gd. Rds. Assn., Leavenworth, Kans.; B. B. Marshall, Pres., Lincoln Co. Auto. Assn., Lincoln, Kans.; P. E. Moss, Sec'y., Lincoln Co. Auto. Assn., Lincoln, Kans.; H. P. Hood, Pres., Lyon Co. Auto. Assn., Emporia, Kans.; E. J. Lesh, Sec'y., Lyon Co. Auto. Assn., Emporia, Kans.; C. F. Travelute, Pres., Marshall Co. Auto. Assn., Marysville, Kans.; M. A. Thompson, Sec'y., Marshall Co., Auto. Assn., Blue Rapids, Kans.; Rev. A. Z. McGogney, Pres., Miami Co. Auto. Assn., Paola, Kans.; W. B. Henson, Sec'y., Miami Co. Auto. Assn., Paola, Kans.; J. O. Sewell, Pres., Mitchell Co. Auto. Assn., Simpson, Kans.; R. M. Anderson, Sec'y., Mitchell Co. Auto. Assn., Beloit, Kans.; B. W. Conrad, Pres., Nemaha Co. Auto. Assn., Sabetha, Kans.; F. J. Herrmann, Sec'y., Nemaha Co. Auto. Assn., Sabetha, Kans.; W. J. Gray, Pres., Norton Co. Auto. Assn., Norton, Kans.; Dr. C. W. Cole, Sec'y., Norton Co. Auto. Assn., Norton, Kans.; A. R. Livingston, Pres., Osborne Co. Auto. Assn., Osborne, Kans.; W. H. Owens, Sec'y., Osborne Co. Auto. Assn., Downs, Kans.; W. D. Womer, Pres., Phillipsburg Auto. Club, Phillipsburg, Kans.; H. C. Bickford, Sec'y., Phillipsburg Auto. Club, Phillipsburg, Kans.; Dr. J. E. McManis, Pres., Pottawattomie Co. A. A., Havensville, Kans.; Schuyler Bigelow, Sec'y., Pottawattomie Co. A. A., Havensville, Kans.; L. E. Fontron, Pres., Reno Co. Auto. Assn., Hutchinson, Kans.; Dr. W. G. Barr, Sec'y., Reno Co. Auto. Assn., Hutchinson, Kans.; Robert Armstrong, Pres., Republic Co. Auto. Assn., Belleville, Kans.; Mont Hill, Sec'y., Republic Co. Auto. Assn., Belleville, Kans.; Dr. J. D. Cole, Pres., Riley Co. Motor Club, Manhattan, Kans.; W. Q. A. Shelden, Sec'y., Riley Co. Motor Club, Manhattan, Kans.; Chas. Wiseley, Pres., Rooks Co. Auto. Assn., Stockton, Kans.; J. Q. Adams, Sec'y., Rooks Co. Auto. Assn., Stockton, Kans.; C. H. Gawthrop, Pres., Saline Co. Auto. Club, Salina, Kans.; George Caldwell, Sec'y., Saline Co. Auto. Club, Salina, Kans.; Henry Lassen, Pres., Sedgwick Co. Auto. Assn., Kan. Milling Co., Wichita, Kans.; C. M. Tucker, Sec'y., Sedgwick Co. Auto. Assn., City Hall, Wichita, Kans.; W. W. Webb, Pres., Shawnee Co. Motor League, Topeka, Kans.; Frederick S. Southwick, Sec'y., Shawnee Co. Motor League, Topeka, Kans.; Dr. J. N. Rose, Pres., Stafford Co. Auto. Assn., Stafford, Kans.; A. W. Hartnett, Sec'y., Stafford Co. Auto. Assn., Stafford, Kans.; Dr. H. D. Smith, Pres., Washington Co. Auto. Assn., Washington, Kans.; J. B. Lewis, Sec'y., Washington Co. Auto. Assn., Washington, Kans.; J. M. Thralls, Pres., The Wellington Auto Club, Wellington, Kans.; A. W. Lynn, Sec'y., The Wellington Auto Club, Wellington, Kans.; W. B. Hess, Pres., Wilson Co. Auto. Assn., Fredonia, Kans.; Albert Nebus, Sec'y., Wyandotte Co. Auto. Assn., 713 Minnesota Ave., Kansas City, Kans.

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(To Be Continued Next Week)



# Stability Devices

## Resumé of a Lecture on Stability and the Sperry Gyroscopic Stabilizer Given by Lawrence B. Sperry

The following is a resumé of Mr. Sperry's lecture under the auspices of the Aero Club of Pennsylvania on Friday, April 23, 1915.

The talk was given at the auditorium of the Y. M. C. A., Mr. Steinmetz, President of the Club, before introducing the speaker read a short summary of René Quinton's experience with the Sperry Stabilizer. The audience was deeply interested in the description given by this connoisseur of aviation, which was as follows:

"I was present at the recent tryout, and took part myself in some of the tests of one of the most promising aeroplanes that has yet been conceived. It was fitted with the Sperry Automatic Stabilizer, which controls the machine without human aid.

"Imagine an Aeroplane in flight. At a given moment the passenger rises, leaves his seat and climbing out on to a wing calmly walks here and there as the fancy takes him. At the same time the pilot rises and holds his two arms above his head, in order to prove that he is not touching any of the mechanism. The aeroplane abandoned, and apparently thrown out of equilibrium, continues to navigate at the rate of 100 kilometers (between 40 and 50 miles) an hour. This was the spectacle provided at Bezons, in the presence of the Safety Commission that had come for the special purpose of appraising the value of the new machine.

"In order to study it at first hand I asked permission to make a flight as passenger. Mr. Sperry kindly consented and we rose into the air in his hydroplane about midday; that is to say, at the most dangerous hour of the day. The weather was unfavorable. The wind was so strong that there were waves on the surface of the Seine. The leaves and branches of the trees were violently shaken. The smoke from nearby factory chimneys drifted along horizontally. There were two distinct aerial currents, one with a downward, the other with an upward curve.

"As soon as we were well on our way, the pilot set the machine on the rise, then entirely abandoned the control. As we passed in front of the members of the committee, he was careful to raise his hands in the air, but I had been watching him narrowly and was already satisfied that he was no longer using them. The aeroplane, governed only by its automatic stabilizer, climbed steadily. We were soon above the trees; I saw their topmost branches shaken by the wind, bending before the sharp gusts that swept over them. We, also, were in the very teeth of the wind; but strange to say, it had no effect upon the working of the apparatus. There was no rolling, no pitching. One might have thought oneself in an ordinary machine in absolutely calm weather.

"At a height of 150 meters, Mr. Sperry made two demonstrations of automatic volplaning. It is well known that in order to execute a volplane, an aviator must allow his aeroplane to dive abruptly in order to regain the speed that the stopping of the motor has caused him to lose. Would the Sperry apparatus be able to accomplish this difficult manoeuvre without the aid of man? In order to prove to me that it would, Mr. Sperry stopped his motor, then raised his hands once more to show that he was not touching the levers. Nothing happened for five or six seconds; the machine appeared to have stopped. Then suddenly it plunged head down, like a dolphin, in a dive that was as graceful as it was impressive.

"We rose again and Mr. Sperry had a new experience prepared for me—a glide with one wing so sharply inclined that it seemed incredible that the apparatus could be working. We leaned over from the horizontal an angle of 45 degrees. The pilot did not touch the controls. The machine governed itself and in this abnormal position, while literally buffeted by the wind, it navigated in absolute safety.

"The Sperry apparatus consists of four little gyroscopes that never fail to bring back the machine to a horizontal plane. The entire outfit weighs 20 kilos (about 40 pounds)."

Mr. Sperry's talk was in the nature of an exposé on the history, different attempts and present status of the art of stabilizing aeroplanes. He finished his talk by a thorough explanation of the Sperry Gyroscopic stabilizer in use in this and other countries. Lantern slides were used in illustrating the different devices and the gyroscope, followed by a reel of moving pictures. "As far back as 1890" he said, "patents were taken out on automatic stabilizers." The different attempts at stabilizing aeroplanes since that time were numerous and varied. All of them, however, can be classified under the following heads:

Speed Maintainers; Angle of Incidence Maintainers; Gravity Devices; Inertia Devices; Accelerometers; Magnetic Devices and Reference Plane Devices.

Before going into each of the devices in detail stability was

defined as, that quality of an aeroplane brought about by mechanical or other means to adhere to a definite angular relation to the horizontal. Referring to the transverse axis of the aeroplane adherence about this axis is called longitudinal stability, while adherence about the longitudinal axis is called lateral stability. Demonstrations of the different axes of the aeroplane were made on a model aeroplane furnished by Mr. Walter Phipps. Inherent stability and automatic stability were defined in a similar manner. Mr. Sperry showed that a speed maintainer, which usually consists of a plate placed normal to the air stream, is not a stabilizer at all, no matter how perfectly it may answer for variations in speed. This is because in puffy air it tends to destabilize the aeroplane.

Angle of incidence maintainers usually consist of a horizontal plate tending to maintain a constant angle between the air stream and the aeroplane. Passing through "swiss cheese" atmosphere, up and down trends affect the plate in such a way as to give instability rather than stability.

Gravity devices, which cover pendulums, mercury tubes, balls in cage, etc., fail because they are affected by not only gravity, but take up the resultant of composite forces consisting of acceleration pressures, centrifugal forces besides aforementioned gravity. Unfortunately the resultant of these forces does not coincide with the vertical. The speaker said he had experimented on an aeroplane with gravity devices, trying every conceivable way to overcome their difficulties. If one is used for longitudinal stability, the moment the aeroplane tips, the acceleration due to the motor is so great that the gravity device works the wrong way. If the motor is shut off the tip is indicated. For lateral stability a pendulum device will work when the disturbances cause small angular tipping of the aeroplane. Once the aeroplane tips to a large extent the pendulum is accumulative, reacting to tip the aeroplane all the more. To prove this point a series of diagrams were drawn on a blackboard. The first showed the aeroplane horizontal, the pendulum vertical or perpendicular to it, then the aeroplane tips, but the pendulum, due to its inertia, does not tip with it. The next diagram showed the aeroplane accelerated sidewise, the pendulum then starting back to the perpendicular relation to the plane, which should be its resultant position, due to the forces acted upon. In the fourth position the pendulum due to its inertia, has crossed the perpendicular, tipping the aeroplane more, thereby causing greater acceleration pressures and more and more tipping.

Inertia devices, as demonstrated before the French Safety competition, usually consist of a tube 9 inches long with two equal weights at either end. The tipping of the aeroplane relative to this pole brings into motion the control areas in the proper direction. The great trouble with this device is that it has no directive force, the pole wandering in any direction, causing the aeroplane to follow it, thereby tipping it in practically any direction.

Accelerometers, consisting of weights supported so they may move horizontally or vertically fall when the aeroplane passes through puffy air. Deacceleration and acceleration pressures cause them to destabilize the aeroplane. Arranged to act vertically, up and down trends tend to destabilize the aeroplane.

The speaker stated that magnetic devices had been proposed whereby the magnetic needle would indicate angular variations. The directive power of the magnetic needle is of such a small quantity that it was not sufficient for the operation of intermediary or servo motors, furnishing power to actually move the controls.

In speaking of inherent stability, Mr. Sperry said inherent stability cannot call upon a considerable righting couple without moving out of its stable zone to generate that righting couple. It cannot therefore return to its zone until the disturbance ceases. In other words, it defeats its own purpose when, in order to counteract the disturbances, it is forced to depart from its stable zone to do it. If an aeroplane can be compared with a ship, we find that Naval Architects in seeking seaworthiness, have tremendously reduced the inherently stable qualities of a ship. A modern ship has the minimum of righting couple. A ship with a small righting couple is more stable in rough seas as opposed to a raft type of ship which has the maximum of inherent stability or the largest righting couples.

Mr. Sperry summed up inherent stability by saying that if the raft type of ship, or the ship having the maximum of inherent stability, is not the best type for the navigation of the seas, he did not think that the precedent would be altered when air-worthiness is sought in aeroplanes.

Taking up the reference plane device. He said, if to accomplish stability we must fly a machine in a certain relation to the



horizontal, why would not the ideal form of a stabilizer be one in which we had a base line with means for making the aeroplane adhere to a definite relation to that base line, which would be the horizontal? It can be said without contradiction that gyroscopes afford the only means for attaining an artificial reference plane in an aeroplane. A picture was shown of the modern gyroscopic stabilizer comprising an element stabilized by four small gyroscopes. In actual operation on an aeroplane, Mr. Sperry stated the device acted in such a way as to correct all disturbances at their incipency, thus the aeroplane never had an opportunity to leave its stable zone. Showing further pictures of the aeroplane stabilizer, the contacts situated on the gyro frame were pointed out, which operate the magnetic clutches of the servo motor. Any tendency of the aeroplane brings about positive motion of the control areas. The power for this purpose is generated by a wind turbine consisting of a fan-like motor, working in the air stream.

Concluding the description of the stabilizer, Mr. Sperry spoke of the Safety Competition in France which was gotten up by L'Union pour la Sécurité en Aeroplane, in which the Sperry Stabilizer carried off first prize. Pictures were shown of the Jury examining the device; of René Quinton, President of the League Aérienne and Lieut. Cayla taking their flights. He said the difficulties of demonstrating the capabilities of the device were solved by having the mechanic walk back and forth on the planes while he, the pilot, stood with his hands over his head, leaving the governing of the plane entirely to the automatic stabilizer. The moving pictures told the whole story. They showed the mechanic walking on the wing and all the other details of the demonstration before the French Jury.

### The 1915 Jannus Flying Boat

(Continued from Page 202)

distribution of weights and surface and the results amply testify to the effectiveness of this effort. Such is the result that in gusty winds and when flying in any evolution there is practically no use of the ailerons.

The internal construction of the wing is free from ordinary glue and is amply strong without any adhesives although liquid marine glue is used in all joints to maintain rigidity under severe stress and to prevent rotting. All bolts go on each side of the beams, through end grain blocks that are brass covered outside of the fabric. The upper and lower wing sections of the opposite sides are alike reducing the number of extras to a minimum.

The pilot is seated in front leaving a seat behind for three large passengers as in the stern sheets of a cat boat. The ample foot space is well above the ribs of the bottom and made in the form of a grating that is removable for cleaning the bilge scuppers or any other purpose. The motor compartment is segregated from all other parts of the boat so that no oil nor grease can be distributed. As a result the passenger compartment is as clean as a new pin and is easy to maintain so.

The ample sheer of the sides of the hull, the great width, the bow shape, and all other considerations make a dry clean hull.

#### Specifications

Make:	Useful Load: 900 lbs.
Type:	Climbing Speed with Full Load:
Construction:	Weight of Machine Empty: 1665 lbs.
	Wt. of machine fully loaded: 2800
No. of seats: 4	Past Performances:
Span Top: 45' 10"	Propeller: Make: Paragon
Span Bottom: same	Diam: 9½ ft.
Chord: 5½'	Pitch: 6½ ft.
Gap: 6 ft. (vertical meas.)	Speed: 1050
Area: 480 sq. ft.	
Length over all: 28 ft.	
No. of ailerons: 4	
Sq. feet in each aileron: 12	
No. of elevators: 2	
Sq. ft. in each elevator: 13½	
Fin Area: none	
Rudder Area: 15 sq. ft.	
Control: Jannus two levers	
Hull: Type: Single step	Position of Tanks: Under motor
Cons.: Detachable tail	Speed Range Loaded: 25-65
Length: 25 ft.	Range of Action Loaded, 240 m.
Beam: Bottom 38 in.	
top, 46 in.	Remarks: Variations in tank
Greatest Depth:	size and number of passengers at
Weight: 435 lbs.	will to change "Range of Action"
Motor: Type: Four cycle 8V	figures. Vacuum system used to
Make: Maximotor	give gravity feed to carburetor.
Position: In hull	
H. P.: 125	
Bore and Stroke: 4½x5 inches	

### Military Aviation Notes

The aero detachment of one aeroplane, two officers and eight enlisted men arrived at Brownsville, Texas, on April 17, 1915. The machine was assembled and given trial flights on Monday afternoon, the 19th, and on the following day. Tuesday afternoon a reconnaissance flight was made by Lieutenant B. Q. Jones, as pilot, and Lieutenant T. D. Milling as observer. Climbing to an altitude of 2,600 feet, the machine passed along the international border within American territory. At about 1,200 feet the observer reported that the line of Mexican trenches was clearly visible, although cloud and haze formations made observation difficult. During the flight, the machine was fired at repeatedly, from the Mexican side. A scattering fire followed by a volley, was directed against the aeroplane. As it is reported that no Mexicans are stationed across the border at this point, it seemed to indicate that a force had been moved to this position in anticipation of the flight. The officers reported that they were not aware of the firing during the flight. The machine was not struck. Later, Lieutenant Jones ascended with Corporal Ruef of the detachment. The machine was being taxied along the ground after landing, when it ran into a ditch concealed in high grass. The fuselage was snapped, the longerons being broken beneath the motor bed, so the machine was temporarily disabled.

On April 26, Lieutenant Walter G. Kilner, while banking in an attempt to rise in a spiral within an imaginary enclosed area, to a height of 500 feet, was struck by a severe puff and thrown further into his bank, causing a side slip. At such a low height, about 25 or 30 feet, he was unable to right his machine before striking the ground. The impact was a grazing blow on the left wing. The planes broke the fall somewhat, but the machine was demolished, with exception of the tail. The pilot was uninjured.

On the same day (April 26) Lieutenant Redondo B. Sutton, in Signal Corps Aeroplane No. 32, experienced a bad side slip while undertaking the restricted area climbing test for junior military aviator. Lieutenant Sutton side slipped almost to the ground before regaining normal control. He avoided a mishap, and escaped with only a rough landing. Rough air is assigned as the cause of the side slip.

Mr. George B. Fuller has reported for duty as Mechanical Engineer. He has had a wide experience with various large automobile factories; as Chief Engineer of the Oldsmobile works; Factory Engineer and Manager for the Pakers Motor Car Company, and Assistant Engineer of the Hudson Motor Car Company. He is a graduate mechanical engineer of the Michigan State Agricultural and Mechanical College.

Mr. Grover C. Loening, Aeronautical Engineer, has just completed a model of a new military aeroplane. The design is unique, embodying the principles of a variable camber wing, original lateral control, and biplane constructional features, adapted to monoplanes. A clear field of view is afforded above the plane. This model will be given wind tunnel tests in the aeronautical laboratory at Boston Tech. by Captain V. E. Clark, Aviation Section, Signal Corps, who is taking the aeronautical course at that institution.

Lieutenant Edgar S. Gorrell is conducting a test of telephone apparatus designed and manufactured by the Western Electric Company, for use in aeroplanes. At present, practically no aeroplane motors are muffled. The noise of motor, the rush of wind through the wires, planes and machine structure, are such that conversation in an aeroplane is impossible, except by shouting when the machine is gliding down, when the motor is either dead or just turning over. A simple device for communication between pilot and passenger is greatly needed.

Flying tests of three candidates for the rating of junior military aviator are now in progress. The three officers taking these tests are Lieutenants Fitz Gerald, Kilner and Sutton. They commenced their training last fall.

Lieutenant Walter R. Taliaferro, Signal Corps, Officer in Charge of Training at the Signal Corps Aviation School, was married on April 29, 1915, to Miss Leicester Sehon, at St. Paul's Episcopal Church, San Diego. Only the immediate family were present, owing to the recent death of the bride's father, Captain Sehon, U. S. Army. Miss Sehon comes from a well-known Army family. She is grand-daughter of the late Colonel Rollins, Ordnance Department, U. S. Army, a noted authority on ordnance gunnery, and has had ancestors in the Army continuously since the Revolution. Lieutenant Edgar S. Gorrell, Secretary of the Aviation School, acted as best man. After a bridal trip, Lieutenant and Mrs. Taliaferro will be at home at 850 A Avenue, Coronado, California.

Captain Wm. Lay Patterson, Signal Corps, who has recently undergone an operation at the Mayo Brothers' Hospital, Rochester, Minnesota, is reported recovering. He will spend three months sick leave in Washington, D. C.

Lieutenants Dana Palmer, 3rd Infantry, and Earl L. Canady, 13th Cavalry, have recently reported for duty as aviation students.



# MODEL NEWS

Edited by WALTER H. PHIPPS



## CLUBS

**THE AERO SCIENCE CLUB OF AMERICA**  
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**MODEL AERO CLUB OF OXFORD**  
Oxford, Pa.

It is the intention of the publishers of *Aerial Age* to promote interest in and encourage scientific model building and flying.

To this end there will be devoted a full page each week to Model News. It is hoped to make this department as instructive and interesting as possible and so wide in scope as to cover the activities of model flyers in all parts of the country.

All model flyers are urged to co-operate by sending in photographs, drawings or descriptions of new and original machines or devices, which they think would prove of interest to others. Address all matters pertaining to models to the Model Editor, care *Aerial Age*, 116 West 32nd St., New York City.

### Aero Science Club Bulletin

G. A. Cavanagh

On Wednesday, May 5th, a special meeting of the officers of the club was held to thrash out the matter concerning rules for the coming Efficiency Contest. Nothing definite was arrived at owing to many technical points which have to be carefully considered. However, it is expected that definite rules will be drawn up before long. A new rule was passed upon at this meeting bearing upon the admission of new members. The rule being that, "all those desiring to become members of the Aero Science Club must be proposed by a member of the Club after which the application must be sanctioned by two other members. The application will be passed upon by the Membership Committee."

At the meeting of May 8th, many suggestions were presented as to the design of the Club's new tractor biplane. Most of the designs were along the lines of the Caudron type machine, with Curtiss control and original landing gear.

Through the courtesy of the Aeronautical Society the Aero Science Club has been granted permission to occupy one of the hangars at the Oakwood Heights aviation field, Staten Island.

A special meeting was held on Wednesday evening at the office of Walter H. Phipps, 503 Fifth Avenue at which the designs of the Club's machine was taken into consideration and a final design drawn up, and later submitted to the Club for approval. In all probability the machine will be under construction within two weeks.

A discussion took place concerning a glider contest for the latter part of this month, to be held at the Highland Park Flying Field, Long Island. This will probably be arranged for at a coming meeting. All information will appear in an early bulletin.

All members are urgently requested to give suggestions concerning rules for the Efficiency Contest as such would be of great assistance to the Contest Committee in drawing up final rules.

For further particulars address the Secretary, G. A. Cavanagh, 49 Lott Ave., Woodhaven, L. I.

### Illinois Model Aero Club

The Illinois Model Aero Club has arranged a model meet with the Milwaukee Club this coming Summer. Our Mr. Lucas is in correspondence with Mr. Henry Woodhouse regarding the Villard Trophy. We believe that the present year will see a greater advance in American Model Aviation than at any time in the past. Model Aero enthusiasts are not so numerous as in the past, but model Aero enthusiasm is now concentrated in fewer individuals; at least this is the way we find it in the Chicago Club.

This concentrated enthusiasm has resulted in better models and a wider recognition of the science of model aeroplanes. Significant of this, have been the public special exhibitions that the I. M. A. C. has been called upon to give different organizations. The Mozart School exhibition meet was a novel as well as a highly successful experiment. The various indoor meets, especially that given before the Sportsmen's Club of America, were also of great importance in the furthering of Model Aviation. The membership that is built upon the enthusiasm that now exists in the model world is a membership that is lasting.

### The Concord Model Aero Club

The Concord Model Aero Club held its third meet, for R. O. G. distance, on April 24th. The winner was Arthur Rockwood with a distance of 779 feet. Edmund E. Bates was second with 703 feet and Earl H. Bean was third, with 400 feet. Rockwood and Bates both used small machines with skids alone. These rise from almost any surface quite as readily as those equipped with wheels and are now the most popular type in this district.

### William P. Dean Introduces Model Flying in Detroit

On April 24th a start was made by Mr. William P. Dean, the well-known English pioneer model flyer, to introduce model flying in the Boys' Department of the Y. M. C. A., Detroit, in the shape of a Model Aeroplane Club.

Mr. Dean gave the boys and young men interested a lecture or talk, following it up with a Model Construction demonstration introducing his most up-to-date *R. O. G. Single Screw* (propeller) *Geared Machine*, 3 ft. 6 inches long.

We hope to be able to give full particulars concerning this model in an early issue, also Mr. Dean's method of making bentwood propellers.

Mr. Dean announces that he is prepared to give the benefit of his experience to any other club, however small in number, formed by young men in Detroit and that he will give them advice as to the right kind of flying models to construct or purchase for contests.



TWO INTERESTING TYPES OF MODELS IN FLIGHT

On the Left is a Compressed Air-Driven Tractor Model Making a Fine Flight; on the Right, a Simple Rubber-Driven Hydroaeroplane Model Making a High Climb from the Water





# Foreign News

Reported by L. d'Orcy and Robert Pluym



## France

Forty warplanes flew over Paris in the early morning on May 2 to test the effect of new restrictions designed to render the capital less visible to raiding Zeppelins.

## Germany

According to a Swiss newspaper, the future Zeppelins will have a capacity of 25,000 cubic metres. The latest existing types have only 17,500. The aerocraft must be finished in two weeks, where formerly three weeks were required. They will carry heavier bombs. The construction staff has been nearly doubled and the machinery augmented.

The new Zeppelins will cost about \$750,000 each. Count Zeppelin has arrived at the factory to supervise construction. The reason for the new activity is that the Kaiser is displeased with the recent isolated attempts to raid England and wants a big squadron to attack London.

(Regarding the above statement it should be noted that three standard types of Zeppelins were in commission at the outbreak of the war; the 1913 military type of 19,500 cu. m., the 1914 military type of 22,000 cu. m. and the 1913 naval type of 27,000 cu. m. (See our issue of March 22).)

No information is at hand regarding the features of the new 17,500 cubic meter type, although it has been known for some time that the latest Zeppelins turned out by the Friedrichshafen factory had a smaller displacement than the ships built in 1914. L. d'O.)

The sensations of participating in a Zeppelin raid are described in an interview given to a Danish war-correspondent by a German air-skipper as follows:

"The chief impression one gets from a Zeppelin trip in the war is, in the first place, one of terrible cold. Nobody can imagine what it means to cruise in the ice-cold air-ocean over the North Sea. We may kindle no light, we may not even smoke a cigar to shorten the hours of the weird night, for the air-skipper dare not betray his presence in the dark between the driving clouds by means of any light. It is as if the cold awakened an intense and peculiar feeling such as one knew absolutely nothing of in former times.

"When we stand in the gondola and hear the monotonous roar of the sea below us, and when we gaze up at the star-studded sky, we feel as if we were a part of the air-circuit itself. We feel as if the balloon were a candle snuffer of the stars, whizzing through the cold of the realms between the worlds. We do not speak to one another; we merely steer constantly through the dark, and hear nothing but the storm waves that break with almost indescribable noise against the fore part of the air cruiser, then hurry like cold water along its flanks and whirl around the gondola with their howling and threatening voices. This ocean of air that rushes against us penetrates our clothing and encircles our bodies with coat of mail in which we learn to know the damp and fleeting spirit of the weather.

"No, there is nothing so wonderful, so tragically thrilling as to float in mid-air and keep the prow ever pointed toward the starry pictures of the sky. Whoever has experienced that once will never forget it. If he were condemned to live on earth, he would become a solitary and brooding man.

"And when, now, as we fly on in the Zeppelin, there bobs up in the deep black night below us, the weak rays of light of a city or village, we have the same feeling as a bird of prey when it spies its victim. While the air cruiser hurries through the clouds, the town with its many lights seems to hurry to meet us, like a great fleet which is being driven across the sea by a wind heavy with fate, while no one on board of the ships dreams of the nearness of death.

"Then we let fall our bomb; we see an enormous white-hot flame in the dark depths, and hear the explosion boom muffled up to us like the voice of a gigantic uncanny thing. Then the air pressure drives the prow of the Zeppelin upward, as a sea ship is borne upward by a great wave, but it is a freer, softer movement, and it seems like the breathing of the giant bird.

"Then, slowly, the prow sinks again, while the icy cold of the air and storm again whirl around us."

According to Reuter's Stuttgart correspondent "The German War Ministry announced on April 27 that a hostile biplane from the west flew over Oberdorf and dropped four bombs on the arms factory. The airmen were shelled from machine guns.

"Six civilians were killed and seven severely wounded by splinters. The material damage done was slight. The operation of the factory was not disturbed.

"The airmen escaped."

(The arms factory referred to is the famous Mauser rifle factory).

## Great Britain

A vivid description of the dangers military airmen face in time of war is given in a despatch to the *N. Y. World* by Charles G. Grey, the well-known editor of the London *Aeroplane*. Particular interest attaches to the part of the report dealing with a daring raid achieved by a pilot of the R. Naval Air Service. This officer "was piloting a flying boat carrying half a dozen bombs, and got up to a height of well over 7,000 feet. When he reached the port which he was to attack, he put the nose of the machine down and dived for the works which were to be destroyed.

"The diving speed of the machine probably reached something over 120 miles an hour, but, as he put it, he 'ran into a bursting shrapnel' at something below 7,000 feet, which spoiled his attack, first of all by knocking his goggles off; secondly, by turning the vertical dive into something over the vertical, so that sundry loose things on the floor of the boat fell overboard (presumably the pilot was held in his seat by his safety belt), and thirdly, by hitting the engine so that a couple of ignition wires and plugs were smashed, and also a valve, which wrecked one of the cylinders.

"A second or so afterward another shell burst near the machine, and broke the rack which held the bombs, four of which fell on the floor, two of them having already been dropped. After that the gunners lost the range and only got near the machine again when he was somewhere below 5,000 feet, and all the bombs but one had been dropped. Then, as the pilot himself put it, 'things got very unpleasant.'

"One bullet scratched his cheek, and several of the bracing wires in the wings were cut, so he dropped his last bomb and headed out to sea as fast as he could, with a half wrecked engine and one wing wobbling badly. Thanks to good strong spars, the wing held together and he reached the water safely.

"There he found that the boat itself had been hit by several bullets, and was leaking, so he had to plug the holes in the boat with bits of handkerchief to prevent her from sinking. He was at that time in the open sea outside territorial waters, so he threw out his anchor, hoping to stop there till one of our patrol vessels came along and rescued him. The anchor refused to hold, and as the wind was blowing onshore, he drifted toward the land till his anchor finally held inside the territorial waters of a neutral country, the authorities of which sent out a torpedo boat and fetched him in.

"When the boat came down on the water, and started to drift landward, the pilot made an effort to get his much battered engine going again, but, doubtless owing to the broken valve, the engine caught fire, and he had to delve among the broken fragments of the passenger's seat to find the fire extinguisher, which all the seaplanes carry. However, he managed to put the fire out successfully.

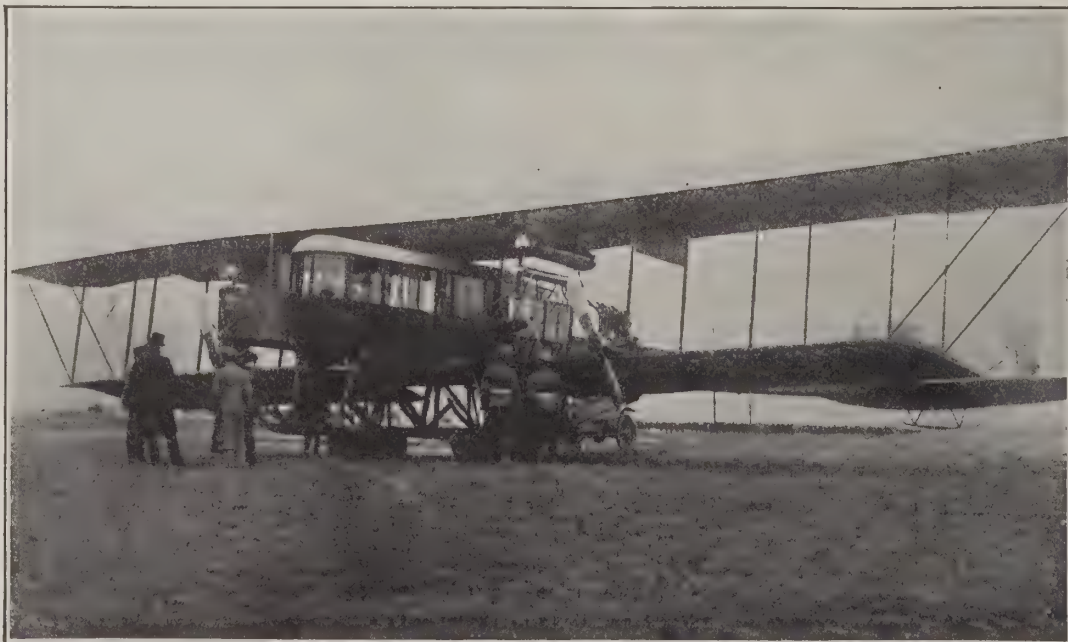
"When the boat was brought ashore and examined, he calmly stated that except for the wrecked engine, no serious damage had been done, only four or five holes in the boat, and fifteen or sixteen in the planes and propeller, and a few wires cut."

## Turkey

The first aerial attack on Constantinople is reported in an unofficial despatch from Athens. It is said three Russian aviators flew over the city on May 7, dropping several bombs, which are believed to have caused extensive damage.

## ONE OF THE SYKORSKY SIXTEEN-PASSENGER AEROCARS—WHICH AFFORDS PULLMAN CONVENIENCES

This aeroplane shows the tremendous strides made in aviation in the past four years. At that time it was not thought possible to construct an aeroplane with a cabin body, with seating capacity for more than two passengers. The Sykorsky is essentially a Pullman car with wings, having regular seats, tables, electric lights, heating, etc. In a night flight lasting 6 hours 12 minutes it carried 10 passengers who had their meals on board. Mr. Sykorsky has designed—and but for the war would have constructed—aeroplane to carry 30 and 60 passengers. From the *Times* (London) History of the War.



(Courtesy of Flying)





Aeronitis is a pleasant, a decidedly infectious ailment, which makes its victims "flighty," mentally and physically. At times it has a pathologic, at times merely a psychologic foundation. It already has affected thousands; it will get the rest of the world in time. Its symptoms vary in each case and each victim has a different story to tell. When you finish this column **you** may be infected, and may have a story all of your own. If so, your contribution will be welcomed by your fellow **aeronuts**. Initials of contributor will be printed when requested.

### The Puzzling Point

Enthusiastic Aviator (after long explanation of principle and workings of his biplane)—Now you understand it, don't you?

Young Lady—All but one thing.

Aviator—And that is—?

Young Lady—What makes it stay up?

If the aeronautical division of the Signal Corps was made into a separate service branch like the Army and the Navy, would you call it the *Airy*?

### Heavier and Lighter Than Air Aeronuts

"From your experience with balloons and aeroplanes, if you were in the insurance business to which would you give the most favorable terms, the heavier or the lighter than air?" asked one of the guests at the round table, at the Aero Club of America.

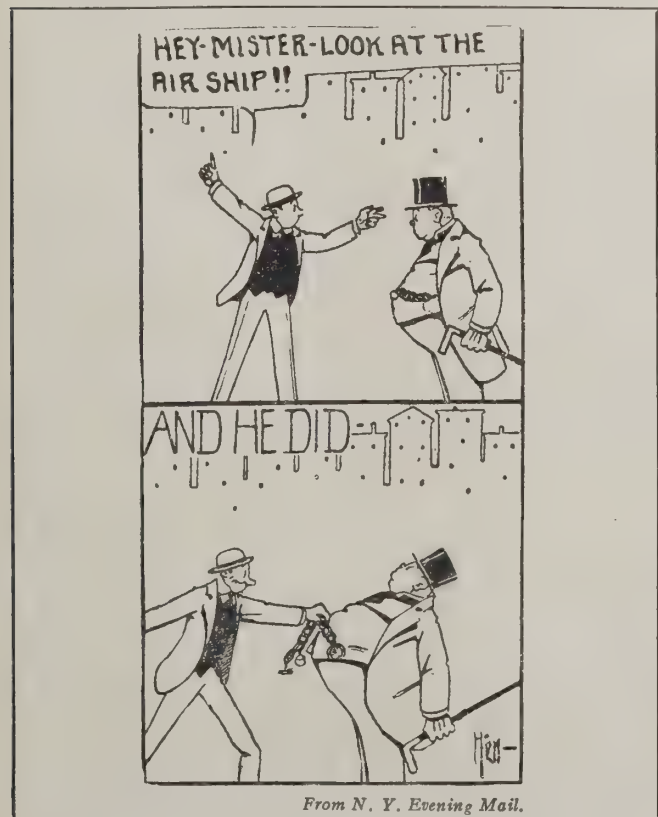
"The lighter than air," was the prompt reply.

"Not here!" interposed a heavier-than-air flying so uncomfortable as being over Philadelphia in a balloon on a warm day, the balloon standing still, the atmosphere around you heavy with the smell of the gas escaping from the appendix, looking down at the church spires, and wondering on which you are going to be impaled if the sun takes a notion to come out through the clouds and thereby expand the gas bag to a bursting point."

"Why, there is no danger in that," said the lighter-than-air partisan. "If you should land on any particular spire all you would have to do is to kick it aside and use the rest of the building as a landing place, or else you can anchor the balloon to the spire." H. W.

By the way, we almost got brain fever in trying to figure out what a "strange aircraft, not a Zeppelin and resembling a large aeroplane" might be.

Perhaps a helicopter with a parachute attachment . . . .



From N. Y. Evening Mail.

The London *Times* published the following hymn, which has been set to music by Sir Hubert Parry:

Lord, guard and guide the men who fly  
Thru the great spaces of the sky,  
Be with them traversing the air  
In darkening storm or sunshine fair.

Thou who dost keep with tender might  
The balanced birds in all their flight,  
Thou of the tempered winds be near,  
That, having Thee, they know no fear.

Control their minds, with instinct fit  
What time, adventuring, they quit  
The firm security of land;  
Grant steadfast eye and skilful hand.

Aloft in solitudes of space  
Uphold them with Thy saving Grace.  
O God, protect the men who fly  
Thru lonely ways beneath the sky.

M. C. D. H.

But Charles Stracey in *The New Witness* objects to the hymn as hardly suitable at the present juncture and suggests that "if the petitions it contains were accorded without exception the result might be most unfortunate." With a view of averting this danger he advises the addition of the following stanzas:

This prayer, O Lord, of course applies  
Only to us and our Allies;  
The men upon the other side  
Do not "uphold," or "guard," or "guide."

It is not hard, O Lord, to know  
A "Taube" from a "Bleriot;"  
Should Zeppelins attempt a flight,  
Don't keep them with thy "tender might."

Don't prosper the aerial work  
Of German, Austrian, or Turk;  
But give the impious fellows fits,  
And smash them into little bits.

### Beechisms

An aviator lives in constant peril,—he is always exposed to a death from being run over by a Ford car.

Judging from the low mortality of the mosquito, we assume they were taught to fly in a first-class school.

If you must give an aviator a doughnut, Gwendoline, there is no need poking it at him on the end of your parasol:—it is perfectly safe for him to take it out of your hand.

When searching for a species of fauna to attack aviators, don't overlook the N. J. mosquito. Our money goes on him,—he already knows his business.

Lawrence is reported to have climbed on a barge to give a piece of his mind to a recalcitrant bargeman who had damaged his plane. We hope it was not the piece from which emanated such splendid aeronautical achievements.

If the government is relying on professional aviators to flock to the standard in case of need, surely "the boys" at Washington are overlooking a bet in not appointing a properly salaried commission from among the faithful to get their names and addresses.

A. C. Beech



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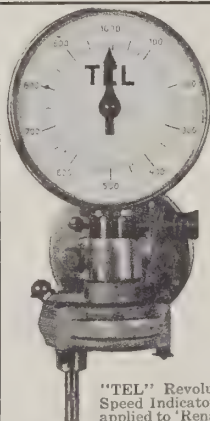
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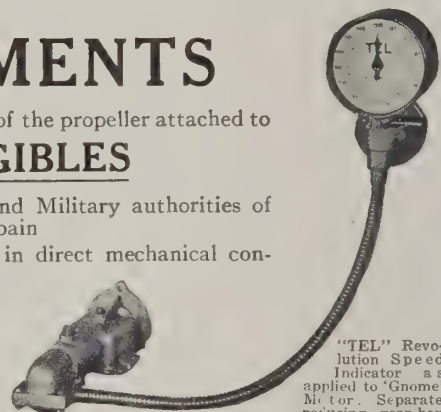
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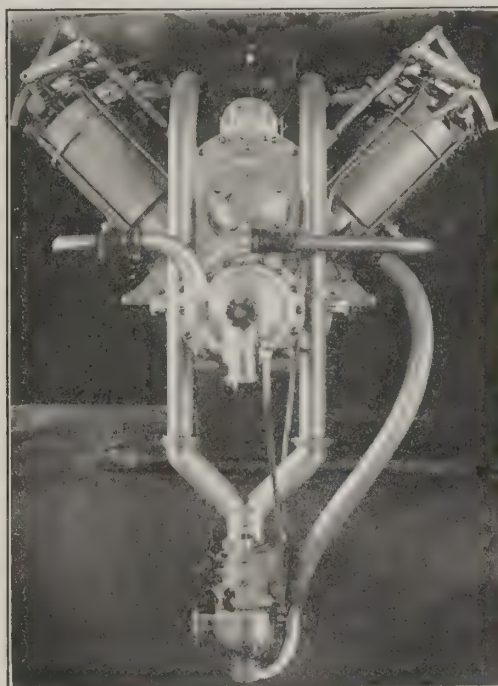
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# AERIAL AGE

## WEEKLY

Vol. I. No. 10.

MAY 24, 1915

10 CENTS A COPY



*The Panama-Pacific Exposition*

*Photographed by Carl Waller from an Aeroplane Piloted by Silas Christofferson*





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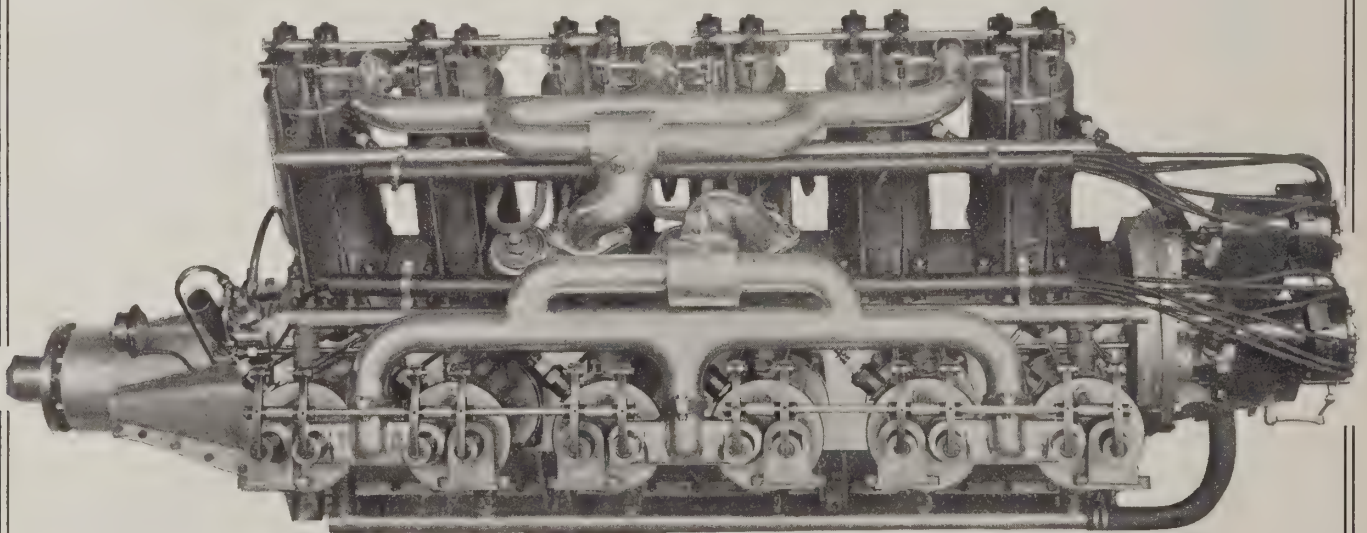
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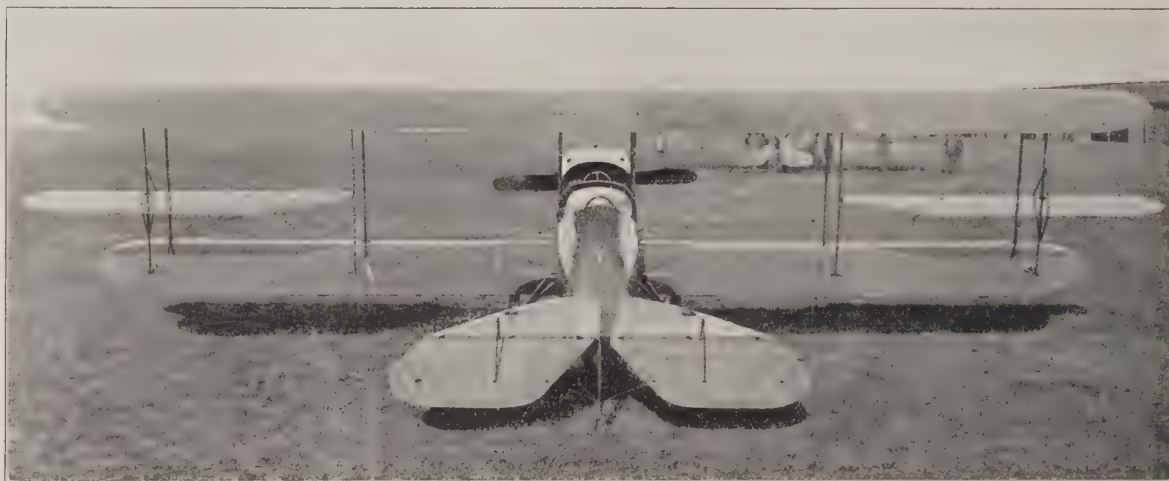
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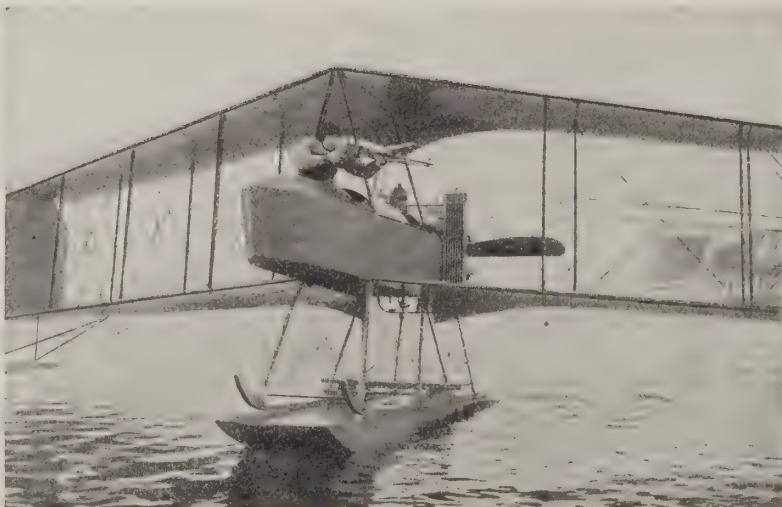
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PUBLISHED WEEKLY BY THE AERIAL AGE COMPANY, Inc., 116 West 32nd Street, New York City

Entered as Second-Class Matter March 25, 1915, at the Post Office at New York, N. Y., under the Act of March 3, 1879

VOL. I.

NEW YORK, May 24, 1915

No. 10

## Why not a Pan-American Aeronautical Conference?

THE Pan-American Financial Conference suggests the possibility of holding in the near future a Pan-American Aeronautical Conference to consider the ways and means for adopting aircraft as vehicles, to solve the difficult problems of transportation which limit the development of the resources of South and Central America.

The South and Central American countries may be said to need aeroplanes and dirigibles to solve their problems of transportation. In most of those countries railroad transportation is limited to the central places, and the process of transportation outside of central places is slow and costly on account of long detours made necessary by mountains, waterways and undeveloped country. The aircraft going, as it does, over all obstacles, at a high speed, would solve many problems of transportation.

Little has as yet been done in those countries to utilize aircraft; there has, in fact, been little done to develop aeronautics on a practical basis. But Latin-American aviators have shown rare adaptability in their profession. They—prominently Santos Dumont first, then Chavez, Bielovucchi, Fels, Montero, Rapini, Figueroa, Newberry and a dozen others—accomplished remarkable feats; Santos Dumont made the first public aeroplane flight ever made; Chavez and Bielovucchi, by flying over the Alps, led the way to the conquest of mountains which has since been made so thorough that there is hardly a high mountain in Europe that has not been flown over.

That aeroplanes and dirigible balloons can be used in those countries, there is no doubt. Aeroplanes have now shown conclusively their practicability for application for commercial purposes. That has been demonstrated by thousands of flights—flights of from three to eight hours' duration; flights of from 500 to 1,000 miles in a day across countries; flights at a speed of between 70 and 90 miles an hour; flights of from 8,000 to 15,000 feet; and flights across mountains and large bodies of water.

The aviation records are:

Speed: 124.8 miles in an hour.

Endurance: 24 hours 12 minutes without stopping.

Altitude: 26,246 feet.

Distance covered in one day, 1,300 miles.

Weight Carrying: Ten passengers on a six hours' flight; sixteen passengers for a short flight. The French authorities have been using aeroplanes very generally in Africa, in the Sahara desert, with success.

These are all European records, but the reason that few records are made in America is not that we lack efficient machines, but rather that there has been no inducement for aviators to make records, and the big constructors that we have are so busy filling orders that they have no need or time to make their aviators engage in making records.

The dirigible balloons have records much more substantial. The big Zeppelins, of which there are eight in commission in Germany—three for passenger carrying, five in the army and navy—have each a carrying capacity of between four and five tons; the passenger carrying accommodate thirty passengers, affording every convenience afforded by a Pullman car; and they travel at forty-five miles an hour, and can cruise for as long as forty hours without stopping. The records of the smaller, non-rigid type are almost as substantial.

What problems of transportation these aircraft can solve and what progressive developments can be worked out in countries where railroads are limited may be imagined.

So far very little has been done in that line. Most of the above mentioned countries have seen but few aeroplanes and no dirigibles. True, Brazil, Argentine and Chili are planning to spend

\$2,000,000 on military aeronautics, and Mexico has acquired a score of aeroplanes, but no thought has been given to applying the aircraft to solve problems of transportation. The aeroplanes acquired by those countries so far have been of the light scouting type, which are not suitable for weight carrying.

Aerial transportation will mean rapid transit with utter elimination of frontiers and the intermixing of people and their interests. That means unification, peace and prosperity.

## Sixteen Thousand Men Not Sufficient to Supply British Forces With Aeroplanes

SIXTEEN thousand men working to their full capacity are unable to supply the British forces with all the aeroplanes they need.

These firms are working day and night turning out machines: The Sopwith Aviation Co., of Kingston-on-Thames; The Graham-White Aviation Co., of Hendon; A. V. Roe & Co., of Manchester; The Vickers Ltd., of Westminster; The British Caudron Co., of Manchester; Handley Page, Ltd., of London; J. Samuel White & Co., of Isle of Wight; The Blackburn Aeroplane & Motor Co., of Leeds; The Aircraft Co., of Westminster; Eastbourne Aviation Co., of Eastbourne; The General Aviation Constructors, London.

These, and other firms, are engaging every man they can get who has any knowledge of aeroplane construction, but they find it as hard to get trained men as our American constructors are finding it.

The Royal Aircraft Factory has abandoned its experimental work and has developed and extended until now it employs 7,000 men.

But the combined output of all these establishments is not sufficient and Sir John French in his reports, in which he continually expresses his appreciation of the increasing value of the air service, repeats that more aeroplanes are needed.

To help meet this need large numbers of aeroplanes have been ordered in America for the British Government. Practically all the American firms that are in a position to fill large orders, under contracts with the penalty clause for failure to deliver on a specified date, are booked to the full extent of their capacity. The American aeronautical industry could use 5,000 more trained men—but they are not to be had.

## Aeronautics in the U. S. Navy

IN his address at the dinner given to the officers of the fleet in New York on May 16th, Secretary Daniels made two statements which, it is to be hoped, bear upon the future of aeronautics in the Navy. The first was:

"We are entering upon a new era of progress such as the navy has never known before." The second:

"We have lately ordered eight aeroplanes and a dirigible."

The nation feels relieved, to some extent, by Secretary Daniels' utterances and will support any step he takes towards increasing the size and equipment of the Navy. But it cannot feel relieved, it is in fact, concerned by the shocking conditions of naval aeronautics.

The conditions revealed by the death of poor Ensign Stoltz show that at no time since the aviation section has been at Pensacola this year there have been more than two aeroplanes in service at the same time, and a dozen men have, at times had to wait for their turn to practice on the single machine available.

The half dozen machines at Pensacola that could be used for training and practice are kept in disrepair by the failure of the departments to allow the necessary supplies.

All the machines now standing idle for lack of necessary spare



parts and supplies and all the machines ordered would barely form a squadron, which is only a fraction of the Navy's actual aeronautical need. As an illustration of our backwardness the Army and Navy together do not possess the equipment represented in the recent air fight that took place near Brussels, when twenty-seven British aeroplanes attacked and destroyed a Zeppelin dirigible.

"This Zeppelin," says the account, "had been frequently seen cruising in the neighborhood of Brussels. About 8 o'clock in the evening it was suddenly surrounded and attacked by twenty-seven aeroplanes.

"The Zeppelin put up a spirited fight with machine guns and tried to escape by rising to a high altitude. But the aeroplanes manoeuvred skilfully and gave the bulky airship no chance.

"Within a few minutes the Zeppelin had received several mortal wounds and fell. All the crew of sixty were killed. Two aeroplanes were destroyed by the Zeppelin's guns."

The above is merely one of the incidents of the war—but it emphasizes our shocking backwardness.

### Almost Any Price

Says the *New York American*:

*Our national experiments with flying machines for defense and submarines for defense are about on a par with some little boy's experiments with wireless telegraphy.*

*We are behind all the principal nations in submarines; we are a pitiful joke in the way of army flying machines.*

*Many of us feel that we cannot afford the expense of these submarines, which cost a few hundred thousand dollars, or the flying machines that cost a few thousand dollars.*

*We could build a thousand flying machines, big and powerful, for ten millions of dollars.*

*How many dozens of millions do you think we would be willing to pay for a thousand flying machines, carrying dynamite bombs, if there were a foreign enemy fleet off our shores?*

We would gladly pay all we own. New York City alone, with taxable property aggregating eight billion dollars, would pay its worth to escape the fate of Louvain and Longury.

### Dragging Down National Defence

The first dirigible balloon to be built for the United States navy was ordered to-day.—Washington despatch to the *Herald*.

And whose fault is it that the navy has not all the dirigible balloons it needs? Primarily the peace newspapers and the peace propagandists. But the direct blame will be placed on Congress. A day of reckoning is coming.—*Herald*.

### Aeroplanes for Exploration

*Boston Christian Science Monitor*.

IF aviators are utilized in Newfoundland for scouting purposes when the sea cannot be navigated it will be a test of a project that greatly interests explorers of Arctic and Antarctic regions. Friends of Stefansson who purpose a relief expedition in his behalf include hydroaeroplanes as part of the equipment to be used, with Wrangel Island as a base of operations. The board of governors of the Aero Club of America and also Admiral Robert E. Peary approve of the plan; and if the expedition sets forth this summer it will go prepared to experiment with aviation as a method of exploration. Men's fertility of resource in applying knowledge, once they gain mastery of a sure method or way of doing things has never been better shown, perhaps, than in the

art of aviation. The uses to which controlled flight are now put are few and their impression on society undoubtedly is slight compared with what will be seen by the coming generation.

### Coast Guards Need Hydroaeroplanes

*San Francisco (Cal.) Examiner*

THERE is a lesson in the tragedy at the beach which we hope will be heeded, and promptly heeded, by those in authority over the life-saving service.

The coast guards could do nothing to rescue the drowning, for the very good reason that their equipment was not adequate. And the equipment of these guards is, in all probability, as good as that of other crews.

Now, it is the expressed conviction of the two aviators who so bravely, but vainly, tried to rescue the drowning fishermen, that they certainly could have saved some lives and likely could have saved all had they had a hydroplane, instead of an aeroplane. In the haste of the sudden summons they were forced to use the only machine they could lay hand on. And it was not of the right type.

Both these men are actual fliers and they know what they are talking about. They very sensibly say that many lives could be saved if the coast service stations were each equipped with a hydroplane, in charge of an experienced aviator.

Any one who saw what occurred Sunday must be convinced that the present equipment of the coast guards is hopelessly inadequate. The poor fishermen did not drown until they had desperately struggled and long kept afloat, and they were not over five hundred yards from the beach on which the life-savers clustered helpless to aid.

"The Examiner" hopes that this matter of equipping the coast guards with a hydroplane will be pressed upon the attention of the authorities. And if these poor fishermen's deaths shall result in life-saving equipment that will save others, then they will not have died in vain.

Let us resolve not to neglect and so finally forget this matter. Let us press it home upon the Government until the coast service is properly equipped.

### Rescue By Aeroplane

*Boston (Mass.) Morning Globe*

Somewhere in the frozen north Vilhjalmur Stefansson, the explorer, and his companions are in need of help. Burt M. McConnell, who was Mr. Stefansson's secretary, was ordered back south about a year ago. He says that he turned over to his chief his rifle and 400 rounds of ammunition, which ought to provision the party with game of the region for two years.

The rescue project now under discussion is a schooner with auxiliary power and a deck space for three hydroaeroplanes. A base would be established at Wrangel Island (where Capt. Bob Bartlett's party took refuge) and from that point the aeroplanes could make daily flights within a radius of 200 miles. Such is the scheme in outline. Its probable cost would be about \$100,000.

Mr. McConnell believes that Mr. Stefansson would be found drifting on the ice and found alive, for he is said to understand every trick of self-preservation known to Indian or Eskimo in those latitudes.

Andree's balloon was a grewsome failure. But the aeroplane is a different machine. The project is an interesting one.

## Do You Find Aerial Age on Your Newsstand?

☛ Through the American News Company we are already placing Ten Thousand copies weekly on the newsstands—but we want to place Fifty Thousand.

☛ We ask the co-operation of all our readers by requesting that they inform us whenever they find that AERIAL AGE is not obtainable at any newsstand—on the Street, in Hotels, in the Subway or Elevated Stations, or in the Railroad Depots.

☛ We shall heartily appreciate such co-operation.



# THE NEWS OF THE WEEK

## Aviation Corps Organized

### School to be Started by the Illinois Naval Reserve at Once

The first naval militia volunteer aviation corps has been organized by the Illinois naval reserve. Taking advantage of the circular letter sent out by the government authorizing the organization of a volunteer aviation corps, the heads of the Illinois station have pushed the project and in ten days the first "air-boat" will be launched at the school.

The boat has been obtained from S. MacDonald and A. W. Andrews. The active work of flying in connection with the naval reserve will be carried on by Mr. MacDonald and aviator Walter E. Lees. The boat is of the standard Curtiss type. Its construction is being rapidly pushed at a local factory under the supervision of Jack Villas, an experienced aviator. With its launching naval training will be given an added significance in the country, according to Capt. Edward A. Evers, in command of the station.

The event will mark the first step toward forming a huge volunteer corps of expert naval aviators, who will work in conjunction with the navy and be of prime importance in defense and attack manoeuvres. The plans for aviation instruction have not been completed, but will be ready with the launching of the boat.

### University of Michigan Gets Wright Seaplane

Mr. Russel A. Alger, President of the Aero Club of Michigan, and Fred. M. Alger have given their model "B" Wright biplane to the Aero Society of the University of Michigan. The machine is provided with floats, and will be flown over the Barton Dam at Ann Arbor during the Annual Boat Club Regatta. Mr. F. Earl Loudy, a Senior Marine Engineering Student, and President of the Aero Society, will pilot the machine.

### Connecticut Aircraft Company Awarded Contract for Navy Dirigible

The first dirigible balloon to be built for the United States Navy was ordered May 14th, when Secretary Daniels awarded to the Connecticut Aircraft Company, of New Haven, a contract for its construction. The new dirigible will cost \$45,636 and is to be constructed and delivered to the United States within four months from this day.

The dirigible is of the non-rigid type and was designed by Capt. Thomas S. Baldwin, with the assistance of Walter H. Phipps.

The cruiser North Carolina, which is now in Mediterranean waters, is to be ordered home and will be sent to one of the navy yards for a general overhauling. She will be equipped as an aviation ship and ordered to Pensacola, Fla.

The new dirigible will, as soon as it is completed, be sent to

Pensacola, and the Navy Department will make that station the school where officers and men will be trained for the aviation corps by a system of study and practice on a more elaborate scale than ever before in the history of the United States Navy.

The new dirigible is designed to carry eight men, four student observers and a crew of four. It will be 175 feet long and 55 feet high. It will have a gas capacity of 110,000 cubic feet and a maximum speed of twenty-five miles an hour. It will be so constructed that its two-hour radius of action can be doubled by carrying four men and replacing with gasoline supplies the weight of the four student observers.

The money to pay for it was appropriated by the last Congress, which gave \$1,000,000 for aeronautics.

The Navy Department received two new seaplanes last week and three others are now being constructed and will be delivered soon. Three more seaplanes are to be contracted for this summer.

A floating shed to cover the new dirigible balloon will be contracted for during the next few days, it was announced.

### Naval Reserves to Start Aviation School in Bridgeport

It is reported that an aviation school will be started in Bridgeport. Lieut. Albert J. Merritt of the Third Division of the Naval Reserves is in charge of the undertaking and is striving to get as many to join as possible.

To be the first city in Connecticut to have such a school Lieutenant Merritt is urging everyone familiar with aeroplanes, or even wishing to get acquainted first hand with air boats, to enlist with the Third division. The inducement is held forth that as soon as a sufficient number of recruits have been enlisted, the government will send a hydroaeroplane to Bridgeport and an expert aviator to instruct the aviation school.

### Mayo Biplane Has Successful Trial

The first trials of the new Mayo Military Tractor Biplane, described and illustrated in the May 10th issue of *Aerial Age*, were carried out at Pratt Field, New Haven, Conn., on May 14th by Stevenson Mac Gordon, the Mayo Company's pilot. It was the first time Mac Gordon had been in a machine in over five months and in spite of this handicap and the exceptional speed the new biplane developed he was up for over 17 minutes making circle after circle at over 500 feet altitude and putting the machine through all manner of manoeuvres. The fact that the machine had not even been tried previous to making this extending trial and that not a single change was found necessary is ample testimony to the designing ability of Chance M. Vought, its designer. Further trials will be held at New Haven, for three or four days after which the machine will be brought to the Garden City Aerodrome, New York, for demonstration purposes.



Reconnaissance Type "A" Mayo Military Tractor, equipped with 90 H.P. Gyro Motor





Baxter Adams in a Curtiss Biplane

#### Baxter Adams Flies at Hopkinsville

Several thousand spectators were thrilled on May 8th at Hopkinsville, Ky., by the daring exhibitions afforded by Baxter H. Adams, the Kentucky aviator, in a Curtiss biplane. Adams made two flights. The first one of ten minutes' length and the second of twenty minutes.

#### C. C. Witmer Returns to Russia to Deliver Aircraft

Charles C. Witmer, the noted Chicago aviator, who has been in Russia since the beginning of the war, teaching the navy the use of Curtiss flying boats, was in New York City, May 14th preparing to leave for Russia again aboard the St. Louis of the American line, on which he sailed Saturday.

He was enthusiastic over the new 100 h.p. Curtiss flying boats which have been developed in this country since the beginning of the war and stated that shipments of these craft are on their way to Russia.

The flying boats which Mr. Witmer expects will keep him busy assembling and delivering for the next year are driven by 160 horsepower Curtiss motors, have a place forward for a gun and gunner, besides room for pilot and one other man if required. Besides these machines many others have gone to Russia, in-

cluding the flying boat once owned by G. Morris Heckscher and another belonging to I. M. Uppercu.

The Russian sailors have taken well to the flying boat type, and will soon have a chance to try those of larger size, like the America, Rodman Wanamaker's trans-Atlantic flyer. This craft, Mr. Witmer learned while in England, is doing good work. With a useful load of 1,200 pounds aboard, including pilot and passenger, and eight hours' fuel and oil, he said she had risen 6,000 feet in forty-five minutes. Commander John Cyril Porte, who is to make the trans-Atlantic attempt, he learned, is in poor health under the strain of his efforts in the British raids, and was at Brighton seeking recovery when the aviator was in England two weeks ago.

One interesting fact mentioned by Mr. Witmer was that the giant Sikorsky biplanes, one of which carried sixteen men, are not in use in the Russian operations, not having proven practical for army service. Sikorsky, he said, was building machines of smaller size for the government.

As a souvenir of this trip there the aviator showed a metal identification plate taken from a German aeroplane shot down some distance from Warsaw. It bore the inscription, "Militaer-Flugzeug, B200-14."

Mr. Witmer has at Sebastopol "Slim" Purington, well known as mechanic, and will take another American with him to-day.

#### Army Aviation Notes

The automatic electric stabilizer, invented by A. J. Macy, and first demonstrated in Hopkinsville, Kentucky, November, 1913, in a Day tractor piloted by DeLloyd Thompson, has just been given an exhaustive test at the Signal Corps Aviation School. The mechanism was installed in Signal Corps Aeroplane No. 31, a Martin military tractor biplane. The machine was piloted on different occasions by Captain Dodd, Lieutenants Taliaferro, Milling and Jones, Mr. Raymond V. Morris, chief pilot, Curtiss Co., and Mr. Oscar A. Brindley, Civilian Instructor in flying. After careful tests, these officers reported that the device kept the machine balanced, afforded automatically the correct bank for turns, made when the aviator used only his rudder, and that it was of such simple, rugged construction as to ordinarily preclude getting out of order. They further reported that the principle of the device is sound and good. Mr. Brindley stated his belief that a stabilizer will be of great aid to the operator in cross country flying, since it adds greatly to the element of safety, to the ease of control, and reduction of fatigue on a long flight.

Signal Corps Aeroplane No. 37 has been shipped to Brownsville, Texas, for border patrol work there. This machine is a Martin military tractor biplane, fitted with a Curtiss Model OX 90-100 H.P. motor.



A Section of the Thomas Bros. Aeroplane Co. Plant at Ithaca, New York



Signal Corps Aeroplane No. 35, the Curtiss tractor constructed for the Army flying competition last fall, has been placed in commission after overhauling. This machine is being used as an advanced training type for flyers in preparation for assignment to the new Squadron machines. No. 27, reconstructed Burgess tractor, will probably take the air about May 10th.

All aeroplanes have been transferred to the School, in order to expedite the training of new officers for the advanced Squadron type. The last word on the eight new machines for the 1st Aero Squadron, now under construction at the Curtiss factory at Buffalo, New York, is that one will be shipped to San Diego for test, and if any alterations are found desirable, such alterations will be made on the remaining seven, at Buffalo. Word received from the factory indicates that the opinion among prominent authorities is inclining toward larger motors. Greater horsepower, of from 140 to 160, is coming strongly into favor abroad.

Signal Corps Aeroplane No. 24, the first Burgess military tractor of the large shipment, received a year ago this spring, has been condemned and ordered dropped from the returns by the Chief Signal Officer of the Army.

During the month of April, 349 flights were made at the School, by 21 aviators, carrying 98 passengers, for a duration of 141 hours and 14 minutes, and an approximate distance of 8,500 miles. One minor accident occurred at Brownsville, Texas, with slight breakage, and one machine was demolished at San Diego, California, without any injury to the pilot.

### PENNSYLVANIA NEWS

By W. H. Sheahan

The following Minute was adopted at the stated meeting of the AERO CLUB OF PENNSYLVANIA on April 16th, 1915.

It is with profound sorrow, and with the most heartfelt regret, that the AERO CLUB OF PENNSYLVANIA has learned of the unexpected death on April 15th, of its first President, Mr. Arthur T. Atherholt.

As one of the Founders of the Club, and its President for two successive terms, he was most active in its organization, and worked indefatigably for its interests and progress. After his voluntary retirement from the presidency he continued as a member of the Board of Directors, and was at all times active and enthusiastic in its work. At the meeting of the Club in March he outlined the plans for a balloon race to be held by the Club early in May, and which was planned to be the greatest ballooning event ever held in Philadelphia.

His open, genial and whole-souled manner won for him a large circle of devoted friends to whom the news of his sudden death at the early age of forty-eight comes as a most sorrowful surprise. Alas! that we shall see his face on earth no more.

It is reported that the Aero Club of Pennsylvania may become actively associated with the Naval Reserves of this state. Having on its rolls many aviators and licensed pilots, also members qualified to act as mechanics; there is every possibility that if planes are furnished the state organizations as planned by the Navy Department, that the members of the local aero club will be invited to act as the "Aeronautic Corps."

The Aero Club of Pennsylvania wishes to announce through the columns of *Aerial Age* that their stated meetings are held the third Friday of each month, in the Bellevue-Stratford Hotel of Philadelphia, at 8.30 P. M. Members of other aero clubs who should be in the city on these dates are cordially invited to attend the meetings.

### Garden City Aerodrome

In spite of the heavy wind which blew all Saturday afternoon this did not prevent a number of automobile parties from visiting the field. Indeed, what with the splendid machines now at the aerodrome piloted by such capable pilots as Harold Kantner, Albert S. Heinrich, John Guy Gilpatric and Tex Millman flying in all sorts of wind and weather has become almost an accepted thing, so that one no longer hesitates about visiting the field in the fear of being disappointed at not seeing any flying.

Kantner continued his popular passenger carrying work, carrying one passenger after the other until dusk. Amongst those who enjoyed rides with him were Dr. A. H. Elliott of Flushing, N. Y.; Major E. Herrera, Chief of the Spanish Royal Flying Service, Mr. Parly H. Noyes of Tenafly, N. J., Mr. Charles P. Keck of Flushing, N. Y., and Mr. William C. Moris also of Flushing.

Much interest was taken in the trials of the second Heinrich Military tractor biplane. Although this machine had only just been completed and had never been given an extended trial flight, Heinrich loaded her up with over 580 lbs. of sand, two hours' supply of gasoline and oil so that the total useful weight lifted was over 900 lbs. With this tremendous load aboard and making no adjustments to the machine he made an extended flight rising to over 500 feet. This, considering the small lifting



Glenn L. Martin and Fred Mills returning from one of their recent aerial hunting trips. They have introduced a new sport that promises to become popular

surface of the machine and a horsepower of only 110 constitutes quite a remarkable achievement for a brand new machine. As soon as a new set of wings are fitted Mr. Heinrich intends to try to climb 4,000 feet in 10 minutes with this load.

### Curtiss Notes

The Curtiss Co. has added two new buildings to their factory at Hammondsport, N. Y. One is a machine shop and motor assembling 45 ft. x 130 ft., 3 stories. The other is 18 x 40 ft., one story for motor testing.

Nearly all the machines being constructed are large high-power tractors and flying boats.

The Curtiss Co. is installing the Emerson "efficiency system" in order to increase their output.

A Curtiss school is being conducted at Toronto for Canadian Military Aviators.

Recent developments in aeroplane construction brought about by the war are:

Discard laminated wood construction as it will not stand weather even with best varnish, and it is very doubtful whether it is stronger than solid wood of equal weight channeled to I-beam form.

### William Thaw Wins French Military Cross

William Thaw, of Pittsburg, who is serving as a pilot in the French Military Aviation Corps has been commended in army orders for his brilliant services, and has received the recently founded military cross according to a recent report received from Paris.

William Thaw volunteered at the beginning of the war in the American corps of the Foreign Legion, and was appointed to the aviation corps in December. It was reported in Paris in April that he had been killed.

### Harry M. Jones Has Sturtevant Motored Biplane

The Squantum Aviation Grounds, Mass., are again assuming an air of activity, many flights having been made from the field during the past few weeks. Among those located there for the coming season appears the name of Harry M. Jones, the daring young aviator famed for his Boston to New York flight of a year ago. He has with him a biplane of his own design with which he hopes to be able to carry two passengers for over a period of four hours. It is equipped with an 80 H. P., six-cylinder Sturtevant motor and he expects to try it out within a few days.

### Students Visit Thomas Aeroplane Plant

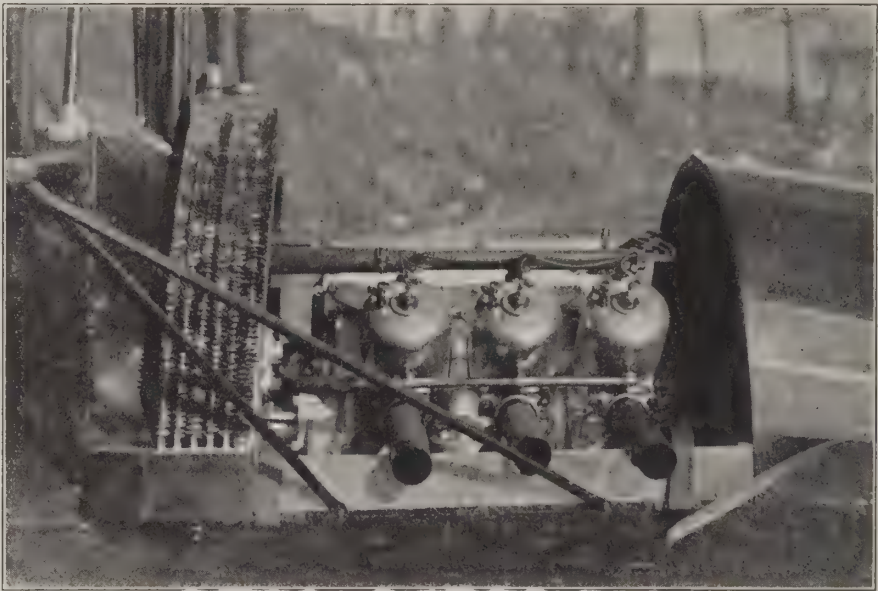
Through the courtesy of W. T. Thomas, of the Thomas Aeroplane Company, the I. C. S. fraternity visited the Thomas aeroplane plant in a body on the evening of May 5th. Ralph M. Brown, who acted as guide for the party, explained in much detail the construction of the machine from the wings to the huge crate for the finished machine in the shed outside.

Several machines are being built and were shown to the visitors in all stages of construction. All the details were explained with reference to the actual working parts. The method of shaping and bracing to save weight with the maximum amount of strength was particularly interesting.



# The Johnson Engine

By  
Neil MacCough



Six Cylinder Engine Mounted in the Shaw Flying-Boat

THERE is a certain fascination about the simplicity of the two-stroke cycle that has probably attracted every designer at one time or other. The fact that poppet and mechanically operated valves and all their mechanisms are dispensed with would lead one at first glance to expect that this type of engine is more simple than the "four cycle." Such is indeed true of the engine after it has been perfected—but there are questions of design such as flexibility and economy which are matters so difficult for the builder that there are in use to-day but few two-cycle engines except in small boats.

Since it is almost universally conceded that reliability is by far the most important requirement of an aeroplane engine, the two-cycle engine would seem to have great possibilities in this respect because of its fewer delicate parts. Almost any two-cycle engine which is fairly well designed, will run well and reliably at some one given load and speed, as may be verified by the action of small boat engines, but the question of proper regulation—variable loads and speeds—seems to have presented great difficulties for this type of engine up to the present. These have been met in the Johnson engine in a unique way which gives a flexibility which is marvelous for a two-cycle engine. There are poppet valves between the carburetors and the crank chambers of the cylinders which may be opened or closed, two at a time, by the lever shown at the right hand end of the engine. By this means power may be regulated by controlling the number of cylinders receiving fuel mixture. The charge in any cylinder

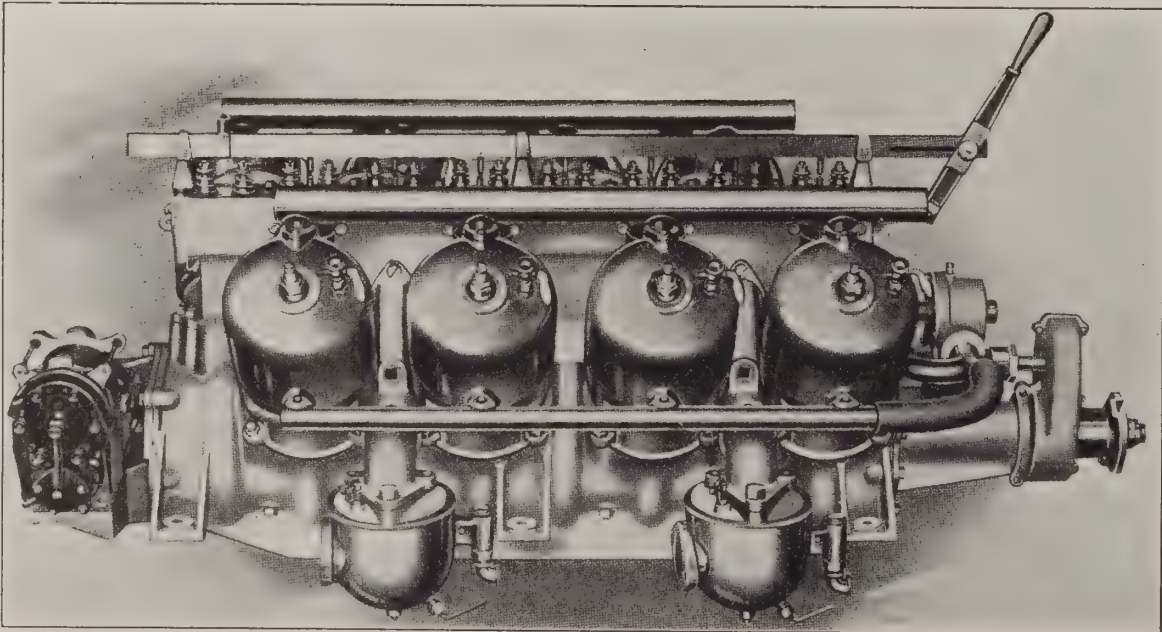
which is working is never throttled in order to regulate the power of the engine.

The Johnson Brothers, of Terre Haute, Indiana, are devoting their entire attention to four 90° V-type models of these two-cycle engines, which differ only in the number of their cylinders. All have a bore of 5 inches and a stroke of 4 inches. The chief characteristics of these engines are given in the following table:

Horse-power	Number of Cylinders	R. P. M.	Width, inches	Length, inches	Weight
50- 60	4	1150 to 1400	24½	37¾	208
75- 90	6		24½	45½	298
100-120	8		24½	53¼	403
150-180	12		24½	68¾	595

The cylinders are of cast iron with jackets of cast aluminum pressed on. Pistons are of magnalium, cooled by the fresh gas mixture as it passes ribs on the under side of the piston on its way from the crank case to the cylinder by way of a port in the side of the piston.

Crank case is aluminum cast in one piece, barrel type. The crank shaft of Krupp chrome nickel steel, with its phosphor-bronze bearings between each throw, is removable through the end of the crank case; the outside of the bearings being larger







# MODEL NEWS

Edited by WALTER H. PHIPPS



## CLUBS

**THE AERO SCIENCE CLUB OF AMERICA**  
29 West 39th Street, New York City

**PHILADELPHIA MODEL AERO CLUB**  
23 South 23rd St., Philadelphia, Pa.

**PACIFIC NORTHWEST MODEL AERO CLUB**  
915 Ravenna Boulevard, Seattle, Wash.

**LONG ISLAND MODEL AERO CLUB**  
401 Grant Ave., Cypress Hills, L. I.

**BAY RIDGE MODEL CLUB**  
6730 Ridge Boulevard, Bay Ridge, Brooklyn  
**CONCORD MODEL AERO CLUB**  
Concord, Mass.

**SUMMIT MODEL AERO CLUB**  
26 Shady Side Avenue, Summit, N. J.  
**THE ILLINOIS MODEL AERO CLUB**  
Room 130, Auditorium Hotel, Chicago, Ill.

**TEXAS MODEL AERO CLUB**  
517 Navarro St., San Antonio, Texas

**MILWAUKEE MODEL AERO CLUB**  
402 Bradford Ave., Milwaukee, Wisc.

**CONCORD MODEL CLUB**  
c/o Edward P. Warner, Concord, Mass.

**AERO CLUB OF ST. LOUIS**  
Columbia Bldg., 8th & Locust Sts.,  
St. Louis, Mo.

**MODEL AERO CLUB OF OXFORD**  
Oxford, Pa.

### Aero Science Club Bulletin

G. A. Cavanagh

A special meeting was held on May 5th, for the drawing up of final plans of the Club's new machines. Mr. Geo. McLaughlin submitted a very fine diagram which was very much liked by the members. Mr. Meyer offered a suggestion that a Curtiss Control be used, but others suggested using the three-in-one control. In all probability the three-in-one will be adopted. Nothing definite has been decided upon in view of the fact that other suggestions are expected.

At the meeting of May 15th, a letter was read from Mr. G. B. Post, a member of the Club, who is now at Cornell University. Mr. Post states that the Cornell Aero Club wrecked its glider during trial flights April 31. The machine fell about 20 feet, the operator, however, received no injuries.

Space in New York city for the building of the new machine was offered by Mr. Ulrich, a member. However the Club believed that the hangar offered by the Aeronautical Society at Oakwood Heights, S. I. was more appropriate for the building of the machine, as some of the members have suggested camping there this summer with the intention of working on the machine. A vote of thanks was offered to Mr. Ulrich for his kind offer. A lively discussion took place when it was attempted to draw up final rules for the Efficiency Contest to take place July 4th. Many points were taken into consideration which made it necessary to reconsider tentative rules which were submitted by members. Mr. Edward P. Warner of Concord, Mass., who is a member, offered very good suggestions for drawing up rules, one of his formulas being adopted. He also stated that both himself and Mr. Bean of Concord, would make every effort to participate in the contest.

### Illinois Model Aero Club

Miss Katherine Stinson, premier aviatrix of the United States, will offer one of the prizes in the Chicago inter-city model meet this Summer.

Miss Stinson has been greatly interested in models since the time Emil Laird demonstrated their educational value by constructing, unaided, a 12 H.P. biplane.

Miss Stinson has organized and enthused a number of model clubs in San Antonio, Texas, and has given many rides to deservng members in her Wright biplane.

The contest committee has now under consideration a plan for a series of seaplane contests. It is probable that a folder will be printed containing a schedule of the Summer and Fall meets, such as was prepared in 1914.

### Texas Model Aero Club is Organized

The Texas Model Aero Club, organized to "popularize and study the art and science of aviation through model aeroplanes," had its inception at a gathering of young aero-scientists Saturday night, May 1st, at St. Mark's parish house. The constitution and by-laws of the club were drawn up by nine charter members who were in attendance and activities under the auspices of the newly organized body began with an "aviation meet" with miniature aeroplanes Sunday afternoon, May 9, in Palm Heights.

The following officers of the Texas Model Aero Club were elected Saturday night: Hamer Smith, president; Dwight Bourn, vice-president; Berkley Hunter, secretary; William McAlpin, treasurer, and Jack Beretta, sergeant-at-arms.

### The Milwaukee Model Aero Club

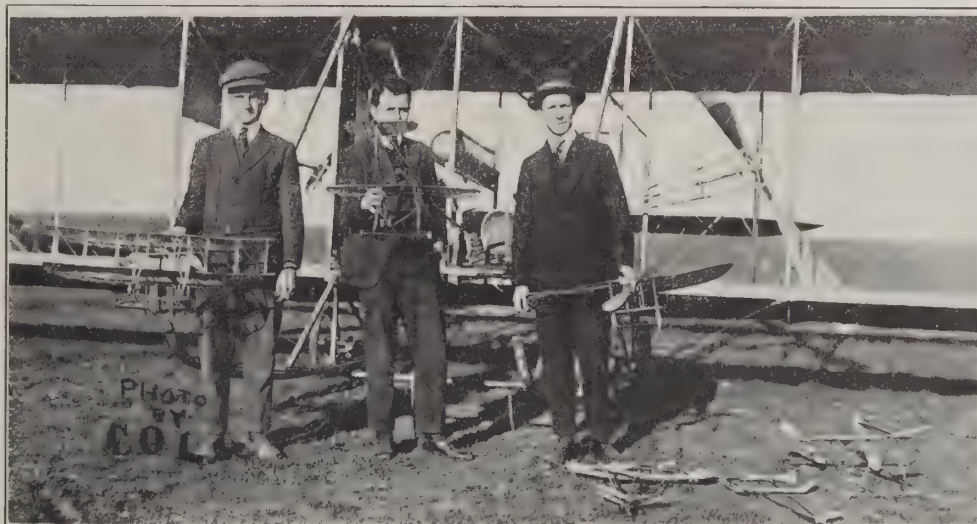
The Milwaukee Model Aero Club continues to be very active and meets are held regularly at Kenwood boulevard and Prospect Ave., Milwaukee. Those who compete regularly in the contests are: Alfred Hayden, Raymond Maas, Walter Loehndorf, Erwin Ewing, Lynn Davies, Clarence Bates, Thomas Dunlop and Kenneth Sedgwick.

Lynn Davies is president, and most of the meetings which are enthusiastically attended are held at his home, 402 Bradford Ave. The Milwaukee club has challenged the Illinois Model Aero Club and will send its crack flyers to compete against the Chicago modelists with the intention of establishing new records if possible.

### Rockwood Wins Concord Aero Club's Duration Meet

The fourth of the series of five model meets of the Concord Boys' Aero Club, May 8th, on the Nashawtuc meadows in Concord, was won by Arthur Rockwood of Medford High School. The contest was for duration of flight of hand-launched planes. Rockwood's model stayed in the air 75 4-5 seconds. It flew 1,000 feet, breaking the New England record for distance. Earl H. Bean of Harvard University was second, his machine flying 39 seconds. Mr. Shult of Newtonville won third place with a flight of 26 seconds for his model.

Officers of the newly formed Texas Model Aero Club. From left to right: Dwight Bourn, Vice President; Hamer Smith, President; and Berkley Hunter, Secretary.







# Foreign News

Edited by L. d'Orcy and Robert Pluym



## France

The police issued strict orders to all the residents of Paris, on the evening of May 11 to extinguish all lights or cover windows with heavy curtains, as the approach of enemy dirigibles had been signalled.

The people did not appear to be in the least afraid, and crowds gathered in all the open places to watch the French aeroplane flotilla performing evolutions. As each aeroplane carried a strong searchlight, the effect was striking, the white path of the light resembling the tail of a comet. Shortly after 7 o'clock a Zeppelin actually approached the city from the northeast. When it was over Dammartin, about ten miles northeast of the city, it was sighted by aeroplane scouts, who immediately gave chase, forcing the dirigible to change its course. It flew off in a northwesterly direction and then turned again to the east, making for its own lines.

In the early hours of the same day a German aeroplane passed over St. Denis, a suburb of Paris, and dropped five bombs.

One bomb fell through the roof of an apartment, slightly wounding a boy.

Another missile on exploding wounded five men who were sleeping in a shed. Two other bombs damaged an apartment house.

According to a statement issued on May 11 by the French War Office a French aeroplane bombarded on the preceding day the airship shed at Maubeuge and set it afire.

(The airship shed referred to was built in 1913 by French Army engineers and had a length of 450 feet. Since the occupation of Maubeuge by the Germans, the shed has been lengthened so as to accommodate a Zeppelin airship. It is generally assumed that the Zeppelins which attempted to raid Paris on several occasions had set out from Maubeuge, which is only 125 miles distant from the French capital, and from a place situated between Laon and Saint-Quentin (about 90 miles from Paris) where the Germans have erected a collapsible airship shed. (L. d'O.)

A Swiss report received in London says that the recent French air raid on Strasburg resulted in the firing of a big tannery, with damage amounting to \$1,000,000.

The tannery was engaged exclusively in work for the German army and its destruction is a great loss to the military authorities.

A Paris newspaper reports that an airship plant has been established at Mannheim on the Rhine, where a new type of airship will be manufactured.

(This report may refer to a simple addition to the shops of the Schütte-Lanz factory, which is located near Mannheim, and where three airships were reported to have been completed in the course of January and February last. (L. d'O.)

"Allied airmen are displaying great activity over Southern Baden," says the Berlin *Lokal Anzeiger*. "They paid four visits to Haltingen on April 28, between seven o'clock in the morning and noon, dropping bombs for the purpose of destroying the engineering works. Only one of these bombs scored a hit, however, causing little damage. Two men were wounded slightly.

"Seven other bombs were dropped on the town, one exploding at the railway station and greatly damaging two express engines and slightly wounding several people. Nine bombs dropped in the surrounding district fell harmlessly in the open field.

"The same day airmen appeared over Mueheim, but were driven back by shell fire. Nine machines flew over Loerrach without dropping bombs."

On May 2 four German machines flew over Epinal, the capital of the French Department of Vosges, and dropped twenty incendiary bombs. No one was hurt. The only damage was two small fires.

The aeroplanes possibly were the same that visited Remiremont, sixteen miles southeast of Epinal. At that place a squadron of French aeroplanes rose to meet the raiders, and the Germans turned toward their own frontier.

## Germany

A German seaplane, coming from the direction of Ostend, scouted over Dover and Folkestone on May 3. It was driven off by gunfire.

It was reported early that day that a Zeppelin airship was traveling in the direction of England from the island of Vlieland, off the northern coast of the Netherlands. The airship passed over the island at 10 o'clock in the morning.

A trawler flying the Dutch flag was bombarded on May 12 by a German seaplane in the North Sea. The report comes from the crew of an Ymuiden trawler which witnessed the incident.

An interesting account of how an allied aeroplane fleet of 27 units attacked and destroyed a Zeppelin in Belgium, comes from Rotterdam.

Two Zeppelins crossed over Brussels travelling westward on May 10. One of them returned alone at 8 o'clock that evening and was surrounded and attacked by the aeroplane squadron. Many persons counted twenty-seven machines in the allied fleet. The Zeppelin made a spirited fight with its machine guns and tried to escape by soaring, but the aeroplanes manoeuvred skilfully and quickly and gave the dirigible no chance to get away. The Zeppelin was disabled in less than fifteen minutes and it fell between Brussels and Ghent. Several explosions accompanied its fall and all the crew of sixty are believed to have been killed. Two of the aeroplanes were destroyed and their pilots killed by the Zeppelin's fire.

## Great Britain

On May 10 a Zeppelin convoyed by German aeroplanes raided three coast towns, Southend, Westende and Thundersley, grouped on the north bank of the mouth of the Thames, killing one woman, setting fire to a number of buildings, and causing considerable damage by explosions.

More than one hundred bombs—mostly incendiary—were dropped on Southend, the popular bathing resort. Eight buildings were fired and the population, asleep at the time—it was 2:40 a. m. when the first bomb was dropped—was thrown into a state of great excitement. Two explosive bombs burst in the streets, shattering windows all about and tearing great holes in the pavement.

One projectile that failed to explode fell on the beach a short distance from a prison ship on which 1,200 Germans were interned.

The following night a Zeppelin airship was seen passing over Sunderland at the mouth of the river Wear, and another was observed from Yarmouth sailing toward the east coast.

Nothing later has been heard from the machines.

American residents of Berlin who had planned trips to London have been warned by high officials against going to England during the coming fortnight, as important Zeppelin raids are planned, according to a Rotterdam dispatch to *The Mail*. German officials are said to have explained that the recent Zeppelin raids upon England were mere reconnoissances to test the strength of British aerial defenses.

Another German aerial raid upon the British Isles, took place on May 17, when a hostile airship, supposed to have been a Zeppelin, dropped about forty bombs on Ramsgate. The same day the port of Dover was also subjected to a bombardment by another Zeppelin.

The official eye-witness of the British Army in France describes as follows the exciting experience of a British airman:

"He was alone in a single-seated aeroplane, in pursuit of a German machine. While trying to reload his machine gun he lost control of the steering gear and the aeroplane turned upside down. The belt around his waist happened to be loose, and the jerk or the turn almost threw him out of the machine, but he saved himself by catching hold of the rear centre strut. The belt slipped down round his legs. While he hung thus, head downward, making desperate efforts to disentangle his legs, the aeroplane fell from a height of 8,000 feet to about 2,500, spinning around and around like falling lead.

"At last he managed to free his legs and reach the control lever with his feet. He then succeeded in righting the machine, which turned slowly over, completely looping the loop, whereupon he slid into his seat."

## Turkey

Since the month of March the German government has supplied a squadron of eight Taube machines to Turkey. These are the aeroplanes that have recently been carrying out reconnoissances above the allied fleets attacking the Dardanelles and the Bosphorus.



Courtesy of *The Independent*

**The French Army's airship "Etienne—Montgolfier" patrolling the skies of Paris. This airship is of the non-rigid or pressure type and was launched in 1913 by the Clement-Bayard works**



**Aeronitis** is a pleasant, a decidedly infectious ailment, which makes its victims "flighty," mentally and physically. At times it has a pathologic, at times merely a psychologic foundation. It already has affected thousands; it will get the rest of the world in time. Its symptoms vary in each case and each victim has a different story to tell. When you finish this column **you** may be infected, and may have a story all of your own. If so, your contribution will be welcomed by your fellow **aeronuts**. Initials of contributor will be printed when requested.

### Bill Smith's Viewpoint

**BILL SMITH:** Wot I sez is this: these 'ere blinkin' Zepps may git as fur as Lunnon, or they may nort, but supposin' as they do? Wot 'arm kin they do yer?

**ARRY EVANS:** 'Arm? On'y drop a blinkin' bomb on top of yer nut—thet's orl!

**BILL SMITH:** 'Old on a minnit. Nort ser fawst. 'Ow kin they drop a bomb on yer s'long es they cawn't see yer?

**ARRY EVANS:** But they ken see yer, yew hignerant man. Ain't yew 'eard tell o' these bloomin' searchlights?

**BILL SMITH:** I 'ave, an' wot I sez ter yew abaht thet is this: there ain't no searchlight invented yet as kin get through bricks an' mortar, nor yet through tiles.

**ARRY EVANS:** 'Ow abaht if a bloke 'appens ter be walkin' dahn street?

**BILL SMITH:** Orl 'e 'as ter do is ter keep under the ahses.

**ARRY EVANS:** Thet's easy talk, thet is. Don't a man never want to cross ver blinkin' road?

**BILL SMITH:** 'E mus' cross quick—see?

**ARRY EVANS:** Yus, en git run over wiv a bleedin' moter, er something o' thet!

**BILL SMITH:** Oh, yew give anyone ver sick, yew do! Nah, 'ark 'ere a minit. En ver fust plice, it stan's ter reason, don' it, as they woudn't try it on be dye?

**ARRY EVANS:** Yus.

**BILL SMITH:** Right. Then orl yew 'as ter do is look arter yerself at nights, en it?

**ARRY EVANS:** Yus.

**BILL SMITH:** Right. W'en yew've 'ad yer tea, yew comes aht fer a drop o' beer. Very well. Keep under the ahses until yer gits ter ver "Nelson's 'Ead." See?

**ARRY EVANS:** Yus.

**BILL SMITH:** Right. W'en yer leaves ver "Nelson's 'Ead," keep under the ahses until yer gits to ver "Blue Pig." See?

**ARRY EVANS:** Yus.

**BILL SMITH:** Right. W'en yer leaves ver "Blue Pig," nip along under the ahses ter ver "Goat and Spectacles." See?

**ARRY EVANS:** Yus.

**BILL SMITH:** Right. There yew finds me wiv me intellec' as clear as it is at this moment, an' yew stan's me a kind love ter keep yer under the ahses goin' 'ome. . . . Mine's a staht-an'-bitter, miss, wiv my friend Mister 'Arry Evans 'ere.—From "Puck."

### Thistle Air-Ships

A fleet of little air-ships sailed  
Out on a whistling breeze,  
Scudded across a flowery mead,  
And rose above the trees.  
Each bore a fearless aeronaut,  
Seated among the sails,  
Delighting in the lofty flight,  
And dreading not the gales.  
Afar they flew, and far apart,  
Until at length becalmed,  
They landed their brave aeronauts  
Upon the turf unharmed.  
No record have we of the height  
To which these air-ships flew;  
The distance was the only point  
Their sailors had in view.  
To mark the limit of their flight  
Each left a seed to grow,  
And now the thistle's purple bloom  
Their landing places show.  
If we can find someone who saw  
These tiny air-ships rise,  
We'll tell you just which one deserves  
The longest distance prize.

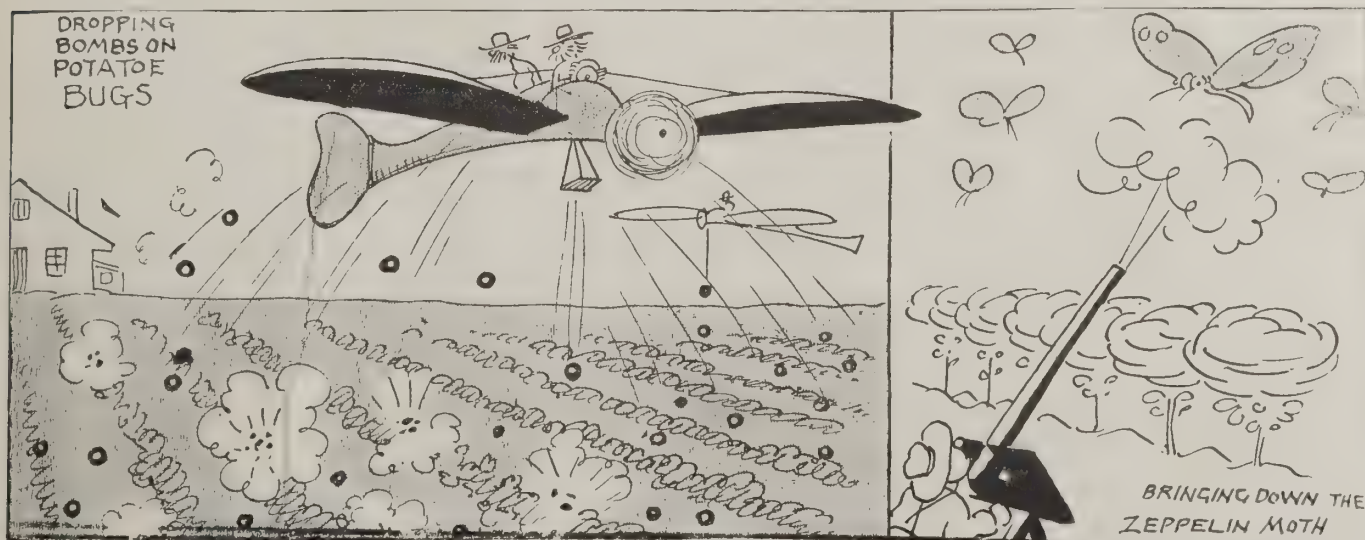
—Henry Crocker.

An account of an extraordinary aerial fight comes from Budapest. It concerns an encounter between one Austrian and three Russian aeroplanes.

The Austrian aeroplane, it is said, succeeded in mounting above its adversaries and dropped a bomb, which struck one of the Russian aeroplanes. The Russian machine plunged 1,500 yards to the earth.

The report goes on to say that the atmospheric disturbance caused by the fall of the aeroplane upset the other two Russian machines, causing them both to whirl down to earth.

What the report omits however to say, is that the concussion caused by the collision of those three aeroplanes with Mother Earth created such an atmospheric disturbance that for twenty-four hours no aeroplane—whether Russian or Austrian—was able to go aloft.



War Tactics in the Garden : By E. T. Powers

(From the N. Y. American.)



# SCHMITT MONOPLANES

**SAFETY  
PEED  
TRENTH  
TABILITY**

PERFECTION IN CONSTRUCTION AND DESIGN

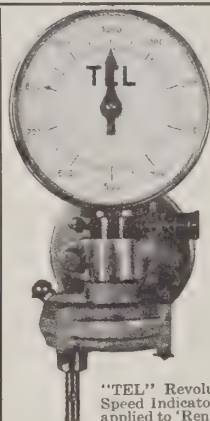
Won First Prize and Blackton Trophy at  
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*Spring Classes Being Formed, Write for Details*

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for indicating and recording the number of revolutions per minute of the propeller attached to  
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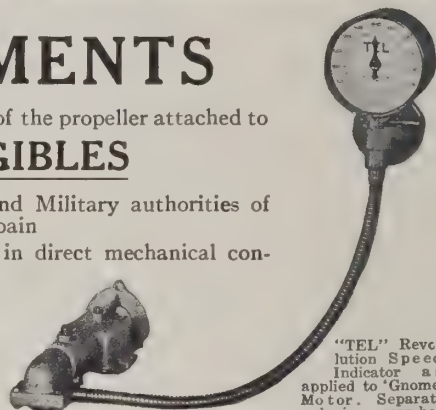
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Indicator as  
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reducing gear-box  
attached to  
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NORWICH, CONN., U. S. A.

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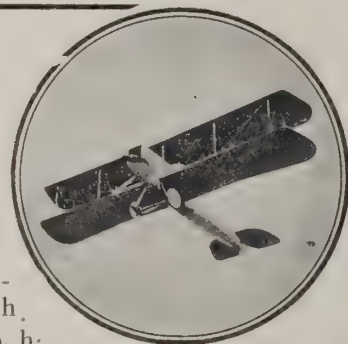
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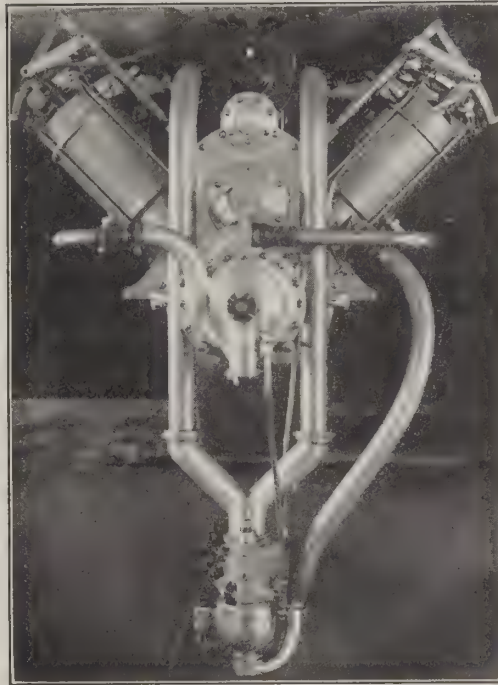
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UNIVERSITY OF ILLINOIS

# AERIAL AGE

## WEEKLY

Vol. I. No. 11.

MAY 31, 1915

10 CENTS A COPY



*The Mayo Military Tractor, Type A, Equipped with 90 H. P. Gyro Motor which is being flown at Garden City by Stevenson MacGordon*



### CURTISS FACILITIES

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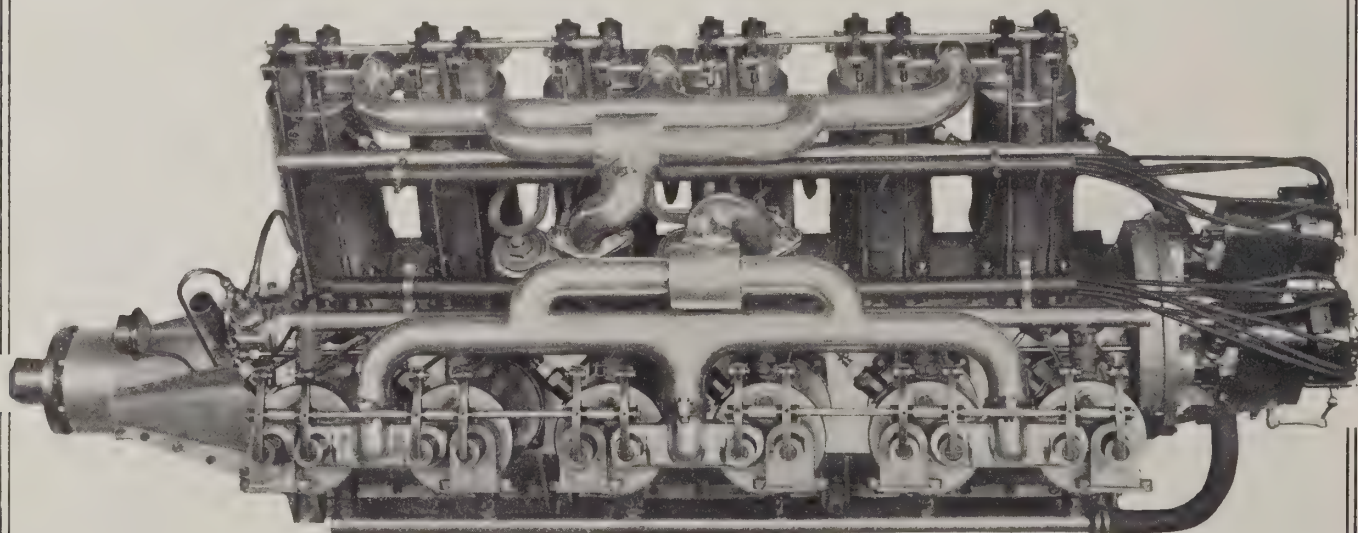
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This 150 H.P. Motor has a bore of  $4\frac{1}{8}$  inches and a stroke of 6 inches, and its normal speed is 1200 R. P. M.

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Top View

The engine complete weighs 590 pounds—about 3.9 pounds per horsepower.

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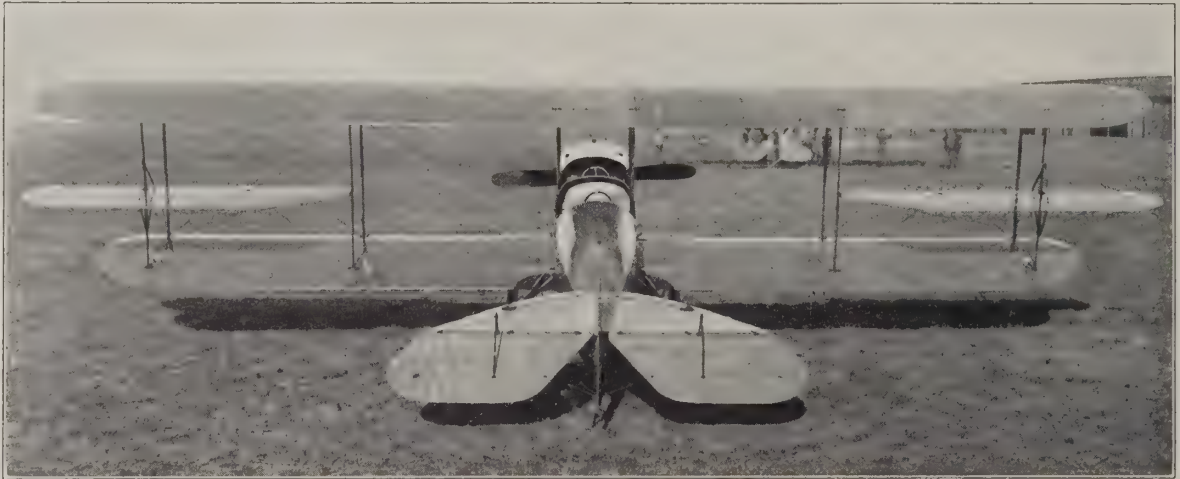
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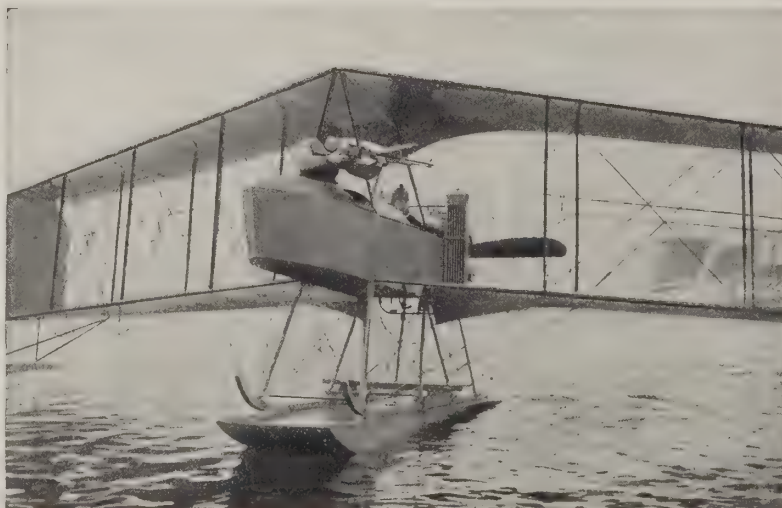
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**Form of wing gives  
an unprecedented arc  
of fire and range of  
observation.**



**Par excellence  
the weight &  
gun-carrying  
Aeroplane of  
the world.**

**Tail-less and  
Folding Enclosed  
Nacelle with  
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**SPEED RANGE,  
40-80 miles per hour.  
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PUBLISHED WEEKLY BY THE AERIAL AGE COMPANY, Inc., 116 West 32nd Street, New York City

Entered as Second-Class Matter March 25, 1915, at the Post Office at New York, N. Y., under the Act of March 3, 1879

VOL. I.

NEW YORK, May 31, 1915

No. 11

## The National Aero Defense Subscription

TO develop aviators, acquire a squadron of aeroplanes for the National Guard of each State, and to get 100 aeroplanes for the mail-carrying service to inaccessible places—the aero mail carriers to form a reserve of trained aviators for military service in case of need—for this commendable work there has been started a public subscription.

The French and German public subscriptions, the details of which are given elsewhere in this number, netted \$1,222,969 and \$1,808,626 respectively—and contributed largely not only to the building of the air fleets, but to the development of the art of flying and the technical development of aircraft—advancing this to the point where it now becomes possible to employ aircraft to solve difficult problems of transportation.

As the *New York Sun*, and *Times* say: "Surely we in America, with our greater resources, can do even better!"

We ought to be able to do better—and we shall if every person interested in aeronautics contributes and urges his friends to contribute.

The *New York Sun* says editorially:

"While Congress at the last session appropriated \$1,000,000 to provide the navy with an aviation corps and gave the army \$300,000, establishing a precedent much to be desired (previously the appropriations for the purpose were paltry), it cannot be said that Congress realized how necessary it was to develop aviation in both services to the point of minimum efficiency. To rise to the emergency it should have loosened the purse strings a good deal more. It is no reflection upon either the army or navy to say that the so-called aviation corps were pitifully inadequate compared with the resources of the leading European Powers in machines and well trained aviators.

"As the United States navy is at least third on the list in dreadnoughts and second to none in efficiency ship for ship, it should have a flying corps of about the same strength as the German navy possesses. What a long stern chase it will be for our navy! At present there is but a small nucleus of an aviation corps. Conditions in the army are sorer still.

"It may be said that a good beginning can now be made with the money voted by Congress. This view is too optimistic. A good beginning is not possible unless the country can be induced to take an interest in aviation for the army and navy and for other Government purposes. *Aviators and aeroplanes are wanted for the militia as well as for the regular service.* The truth is aviation has never made a good start in America. Above all, it is necessary to make up for time lost in indifference to the art of flying as a condition of progress.

"To be cordially commended, therefore, is the enterprise of the Aero Club, which proposes to raise by popular subscription a fund for the development of aviation by purchasing machines and training pilots, thus following the example of France, where in one year \$1,222,969 was raised, and of Germany, where the sum collected was \$1,808,626. *Surely we in America, with our greater resources, can do even better.*"

The *New York Times's* editorial says:

"In this period of the world's history the aeroplane is almost as essential to the defense of the nation as the submarine, the fast cruiser, and the coast battery. The United States Navy has only three aeroplanes in commission, and the army is not much better supplied. Yet in modern warfare the strongest navy would be placed at great disadvantage without the assistance of aerial scouts, coast defenses would be less effective, and an army in the field would be practically at the mercy of a force inferior in numbers but supplied with modern equipment. The National Guard, which, as General Wood said the other day, belongs to the first line of our land defense, has no aeroplanes. The Naval Militia has none. There are no aeronautical centres for the army and navy. The Aero Club of America, which has head-

quarters in this city, in view of the gravity of the situation, makes a direct appeal to the American people "to start a public aero-nautical subscription similar to the French and German subscriptions of 1912-13, to raise funds with which to develop aviators, acquire a squadron of aeroplanes for the National Guard and the Naval Militia of each State, and to get 100 aeroplanes for the mail-carrying service to inaccessible places—the aero mail carriers to form a reserve of trained aviators for military service in case of need."

"The French and German subscriptions were very successful, and resulted in an appreciable increase in the efficiency of the military aeroplane service of both countries. The Governments of both those countries, however, have been alive to the usefulness of the aeroplane since the heavier-than-air flying machine was invented. The popular subscriptions supplemented the work they were doing. The best efforts of the Aero Club can do nothing more than that in this country; the Government must go to work practically on its own account to secure an air scout service. The appropriation of \$1,300,000 to this end by the last Congress is but a small beginning. The club, however, announces that it is now working in co-operation with all the departments of the Federal Government interested in aeroplane service, as well as the State Governments and various influential public bodies and institutions. *Its plan is worthy of serious consideration and should be helpful in the work of strengthening our national defense.*"

*Aerial Age* appeals to its readers and urges hearty support to this worthy movement. Subscribe whatever you can, no contribution is too small—or too large! Get up a collection among your friends.

## The Separation of the Air Service from the Signal Corps Great Britain's Latest

IN *Aerial Age* for May 3rd, we indorsed the suggestion made to separate the Air Service from the Signal Corps. The following order issued by the British War Office gives the details of a further separation made necessary by the expansion of the air service, and its extended duties.

This new change virtually turns the air service into an organization similar to the Navy itself, dividing the air forces into wings composed of between two to four squadrons each and placing each wing in charge of a commander.

The points set forth in the order are as follows:

The Royal Flying Corps (Military Wing) will be organized in wings, each under a separate commanding officer and consisting of two, three, or, in special cases, four squadrons.

An additional Wing Commander, designated the Administrative Wing Commander, will command the Royal Flying Corps depot, and be the officer in charge of Royal Flying Corps records. In war he will also command the Reserve Aeroplane Squadrons and the Aircraft Park at home.

The appointment of Officer Commanding the Royal Flying Corps (Military Wing) is abolished.

Provisional establishments for flying headquarters, for the headquarters of the Administrative Wing, and for the Royal Flying Corps depot are issued.

Wing Commanders will be responsible for the training and administration of their wings, including accounting for equipment, clothing, and necessaries.

The Adjutant will assist the Wing Commander in all questions of training and discipline.

The Equipment Officer will assist the Wing Commander in all questions concerning technical stores; he will account for all technical stores on charge of the wing, making such issues to Squadron Commanders as may be necessary to maintain the equipment of their squadrons. He will obtain receipts from



Squadron Commanders for all issues, and will grant receipts for all stores returned, but there will be no ledger transactions between Squadron Commanders and Equipment Officers.

The Administrative Wing Commander will carry out similar duties as regards the Reserve Aeroplane Squadrons, the Royal Flying Corps Depot, and the Air-craft Park; he will also be responsible for the final approval of all recruits, and for the recruiting of men specially enlisted during war; for the allotment of personnel to squadrons, for the despatch of reinforcements of personnel abroad, and for preparing the monthly statement of allowances and extra pay of all the officers of the Royal Flying Corps.

Personnel will on enlistment be sent to the Royal Flying Corps Depot for training. Here they will be trained not only in the ordinary duties of a soldier, but also in their technical duties as air-mechanics in the technical section of the Royal Flying Corps Depot. From the depot they will be drafted to wings according to requirements. Training at the depot will normally take six months, but will often be much curtailed during war.

Promotion to the rank of sergeant will be made by Wing Commanders; promotions above the rank of sergeant will be based on the recommendations of Wing Commanders and authorized by the Officer in Charge of Records from a general roll of non-commissioned officers kept by him.

The establishments will be as follows:—

	Officers	Sergts.	Air Mechanics and Corpls. Privates.		Total.
Wing Headquarters.....	3	6	3	18	30
Administrative Wing....	4	3	11 rank and file	—	18
Records and Recruiting..	2	7 civilians	—	—	9
Depot.....	7	10*	228 rank and file	—	246

\* And 1 Warrant Officer.

As we have already said, it is regrettable to have to take the aeronautical division from those who nursed it, as it were, from babyhood. But the welfare of the service demands it. Congress has shown that it will not allow more to the aeronautical division than it allows for the rest of the Signal Corps—and that is not enough, is only a fraction of what is needed. Therefore the separation must come.

Among the consoling features are the fact that it is for the good of the service, and that the officers who have charge of it now will probably be in charge when it becomes an independent bureau. The first will suffice an officer. Incidentally, for the good of the service recently New Yorkers refused to indorse the proposition to establish a government aircraft factory in New York. They would have liked very much to have it, but for the good of the service they opposed the motion.

## Deficiency of Our Army and Navy in Aerial Craft

Springfield (Mass.) *Morning Union*

WITHIN the last few days contracts were signed for three hydroaeroplanes for the Navy, and bids were opened for two dirigible balloons, also for the Navy. This is a small beginning toward giving the United States Government power

and standing in respect to aerial warfare. How weak is our present status in this regard is indicated by the fact that the aerial fleets of our Army and Navy combined now include only twenty-three (\*) planes, whereas France and Germany each had in excess of 1,000 planes at the outbreak of the war. For a long time we have been doing nothing to develop the possibilities of aerial warfare. Although the United States was the birthplace of the heavier-than-air flier, we have let other nations take the lead in applying the craft in a military sense. Even yet we have no definite policy in this regard, but the fact that the last Congress appropriated \$1,300,000 for aeronautics for the two arms of our military establishments admits of more being done than at any time in the past. It will be necessary for the next Congress to do something more substantial if we are to attain any real efficiency in this connection. In speaking of the theoretical uses of aerial craft, Asst. Secretary of the Navy Franklin D. Roosevelt says:

"The Office of Aeronautics considers that the dirigible is to be the kingfisher of the submarine. The aeroplane rapidly scouting the seas off our harbors and around our fleet discovers the enemy's submarines lying in wait for innocent merchant ships, or attempting to creep up on our fighting ships. The dirigibles from the shore stations or from the dirigible ship of the fleet, thus warned by the aeroplane scouts, proceed to the attack of the submarines, dropping on them heavy bombs, fitted with fuses to explode on hitting, or after sinking to a certain depth. A 50-pound bomb successfully hitting a submarine or exploding under water near one will destroy these underwater craft. The dirigibles will also in a similar manner counter the mine fields of an enemy."

These suggestions are certainly interesting, but no such warfare is practicable until the Government first gets the planes and dirigibles and develops military expertness in their use. There must be a well-formulated policy, supported by Congress, or we shall remain little better than a joke in this matter.

(\*) This figure was given in Congressional reports last year is not true. The Army and Navy together have not as many as ten aeroplanes in actual service to-day.—[Editor].

## In Memoriam

This week it falls to us to make sorrowful mention of the passing, after a brief illness, of one of our editorial board—Mr. Robert Pluym. Mr. Pluym was a member of the exporting firm of Pluym & Ochs, Ltd., 140 Broadway, and since 1912 he has acted as the exclusive agent of the Curtiss Aeroplane Co. in Russia, and it was through his efforts that the orders for the recent consignment of aeroplanes for the Russian government were secured. Mr. Pluym has perhaps sold more American aeroplanes than any other one man, and his death represents a very real loss to American aeronautics.

Mr. Pluym, who was devoted to literary work, was a valued member of our staff, and we shall miss his counsel and knowledge.

## Do You Find Aerial Age on Your Newsstand?

¶ Through the American News Company we are already placing Ten Thousand copies weekly on the newsstands—but we want to place Fifty Thousand.

¶ We ask the co-operation of all our readers by requesting that they inform us whenever they find that AERIAL AGE is not obtainable at any newsstand—on the Street, in Hotels, in the Subway or Elevated Stations, or in the Railroad Depots.

¶ We shall heartily appreciate such co-operation.



# THE NEWS OF THE WEEK

## Toronto Aviation School Opens

The McCurdy Aviation School opened at the Island sandbar on May 10, and four of the eleven students who form the first class went into the air for about fifteen minutes each, according to the *Toronto Mail and Empire*. Owing to the difficulty which the wind is likely to offer during the daytime it has been decided that flights will be commenced at an early hour in the morning, continuing as long as possible, and recommenced late in the afternoon, when the wind moderates, the flying being kept up until sunset. Students of the school will therefore have to be ready at 5 o'clock this morning for their lessons. On account of this new arrangement it is intended that the members of the class shall live at the Island, and tents will be erected for them near the hangars.

The first aviation class includes seven Toronto men, two of whom are officers of local units, while there are also two other officers from outside points. The names are: Lieut. F. Homer Smith of the Divisional Cyclists' Corps, Lieut. Douglas Joy of the 9th Mississauga Horse, Capt. E. H. McLachlin of the 2nd Dragoons, Ottawa; Lieut. D. H. Hay of the 31st Regiment, Owen Sound, and Messrs. Cyril Day, Grant A. Gooderham, A. S. Ince, M. H. Stephens (all of Toronto). R. A. Courtneage, Brantford, C. Norman Geale, Peterboro, and Warner H. Peberdy, of Rugby, England. The last-named, while taking the course, is also managing the school for Mr. McCurdy, and has been actively engaged with Mr. McCurdy in arranging for it. Mr. Peberdy is an engineer and has become an expert with the Curtiss engine. As aviators in flight need only the most elementary knowledge of their engines, since if a stoppage occurs in the air there is nothing to be done but to come to earth, none of the learners are being required to make a special study of the engine with which the flying boat is equipped.

## Hangar Will Be Built for Aero Meet in Philadelphia

Every licensed pilot in the Philadelphia air zone was requested in a call issued at the meeting of the Aero Club of Pennsylvania, May 21st at the Bellevue-Stratford to report immediately by mail to Joseph A. Steinmetz, president of the club at that hotel. This step was occasioned by the National Aeroplane Contest, which is to begin on July 4, and in which League Island will be one of the most important stations.

As a result of the coming competition, also, the Aero Club inaugurated a \$1,000 fund for a hangar to be located at League Island. The members of the club immediately contributed \$100 toward the fund and another \$100 was quickly promised by an unknown subscriber.

Captain Hugh Willoughby, in an address treating the subject of the aeroplane in opposing submarine warfare, said:

"Few people see the possibilities that there are in the aeroplane for locating submarines and protecting ships. A battleship is almost helpless against a torpedo. The only protective measure that it seems possible to develop now is the aeroplane. If the Lusitania had been guarded from the air above the terrific disaster of its sinking might have been avoided."

## John Madison Seely, Four Months' Baby, Visits Battle Zone

John Madison Seely, four months old, of Hammondsport, N. Y., has just gained the distinction of being the youngest visitor to the front in this war.

Accompanied by his mother and father, who is L. J. Seely, an aeronautical expert, John left Paris five days ago and motored through the French and British lines to British divisional headquarters, "somewhere" in Northern France, where the elder Seely had been summoned for a conference. Afterward the Seelys motored to Boulogne, proceeding thence to England.

Preston Lockwood of St. Louis, who was a member of the party, returned to Paris and told *The World* correspondent that the baby seemed to thrive on modern warfare.

"Mrs. Seely," said Lockwood, "said her son was somewhat ailing when the family left England three weeks ago, but he gained several pounds in France and was the healthiest when within sound of the guns."

## Great Activity at the New Heinrich Plant

The Heinrich Brothers of Baldwin, in their new manufacturing plant at Freeport, have about 35 mechanics working in night and day shifts manufacturing their latest military type tractor biplanes.

## Thomas Bros.' Activities

An idea of the work being done by the Thomas Brothers of Ithaca is given by a communication, the substance of which is as follows:

"The Thomas Bros.' Aeroplane company, of Ithaca, N. Y., desires Mr. Forseth's services, explaining that it has a contract for \$250,000 worth of flying machines for the allied nations."

Mr. Forseth was engaged in an aeroplane company's factory in St. Louis for some time.



Eight of the New Army Tractors being built for the U. S. Government at the Curtiss plant





*The New Thomas Military Tractor*

### New Corporation

The Automobile-Aviation Industries corporation of Buffalo has filed papers at Albany. The company is capitalized at \$10,000 and the directors are Elizabeth and Edward P. Leitz and Homer Sanford, all of Buffalo.

### Hupmobiles for Aviators

Francis A. Wildman, civilian instructor at the government aviation school of North Island, Calif., and Lieut. Douglas B. Netherwood, of the United States Aero corps, recently purchased Hupmobile roadsters which they will put into service in their daily work. These cars will be used for following aircraft, and were selected in the open market after a strenuous competitive test had been made of nearly all American makes.

The Army Aero corps on the Pacific coast are conducting, at the present time, a number of experimental trials in all kinds of air work, and it is necessary on long flights that the aircraft be followed by these Hupmobiles. The officers in charge of the machines will take notes of various conditions of the aircraft at stated intervals. It is thought that probably a number of long-distance flights will be made and for this reason the motor cars will be given very hard, strenuous work.

The fact that the Hupmobile was selected of all American cars by the Army engineers, shows the high Hupmobile standing among mechanical men—not so much because of the sale itself, but because the expert judgment of the army officers and engineers in this matter of selecting an automobile, proves that the Hupmobile stood very high in the exhausted tests and technical criticisms that these engineers alone are capable of making.

### The Wright-Curtiss Patent Suit

Motion made on May 11th in United States district court at Rochester by counsel for the Wright Aeroplane company, requesting that an early date be set for argument on affidavits for the issuance of a preliminary injunction against the Curtiss Aeroplane company of this city, was denied by Judge Hazel, after W. B. Crisp, representing the Curtiss company, had opposed the motion and declared that he was prepared to try the case on its own merits in open court. June 21 was then set as the date upon which the patent suit will be tried.

### First Baltimore-Made Flying Boat Shipped

On April 28th, the first Baltimore-made flying-boat was shipped from the factory of Jannus Brothers, in Brooklyn, to a Detroit purchaser. This machine, designed and built under supervision of Fritz Ericson, was successfully flown on numerous trial flights over the Patapsco River, near Fort McHenry. The flights, according to Mr. Ericson, were satisfactory in every manner. The machine is capable of making over 75 miles an hour in the air. Tony Jannus will leave shortly for Detroit, where he will demonstrate the new machine to the purchaser, W. E. Davidson. For stability while in a flight and safety, this machine, it is asserted, far surpasses any past models. On one trip a total load of 2,200 pounds was carried under very low power. With full power it will be easy to exceed the useful load for this model.

Work will commence at once on a similar machine, which will be completed within five weeks.

The Jannus Brothers give much of the credit for the success of this model to Fritz Ericson, who learned to fly last fall.



*Students at the Canadian Curtiss School, Toronto. The new Canadian school already has seventeen pupils and a waiting list of SEVEN HUNDRED MORE. The Canadian Curtiss plant already employs one hundred men.*



### William Thaw, Honored By France, Writes of Thrilling Experiences

William Thaw, the Pittsburgher, who is a member of France's war aeroplane force, is enamored of the life, according to letters his father has received, and of which the following is an extract:

Another short letter just to say "hello" and "tout va bien." The past few days, since I last wrote you, have passed very quickly—just enough work to seem to be busy and very, very interesting work at that. Have made six reconnaissances to date and tomorrow morning I do my first regulating of artillery fire, having tried out my wireless to-day. Have so far flown about 1,200 kilometers over German territory and have more than once brought back fairly important information. So as I said before, it certainly feels great to be really doing something.

Met my first and only "Taube" last Thursday morning and, believe me, I was scared. But so was he and beat it straight down, much to my relief, as we were 40 kilometers from our lines.

Every day something new, something exciting. It's a great life. Am enclosing a number of photos which you may find interesting, knowing you'll take better care of them than I would. Am at hangars every morning by 6 and had nearly two hours in very rough weather this afternoon, so will close.

P. S.—Answering questions in your last letter—My pack weighed actually 120 pounds (not kilos.) and on the short four or five hour hikes into the trenches, considerably more than that with the jam, chocolate, condensed milk, etc., which I took with me when available.

The letter was written on Sunday, April 18, and the name of the town was deleted by the censor, evidently because the location of the headquarters of the flying corps was not to be made public.

Mr. Thaw has received many congratulations from friends of the family following the publication of the announcement that "Billy" had been decorated by the French government for bravery and promoted to sergeant for exceptional services.

### Garden City Aerodrome

There was not much activity at the Garden City Aerodrome last week owing to the inclement weather, the only flying occurring on Thursday when Millman flew the 80 Schmitt monocoque over to Belmont Park Race Track and back, just before the opening race of the season. Later in the afternoon Kantner brought out the 80 Gyro motored Huntington tractor and took Walter H. Phipps for a flight, giving him a demonstration of steep banking and spiraling, landing with a steep spiral glide from a height of 800 to 1,000 feet. On landing he expressed himself as delighted at the ease with which the craft handled and the marvelous manner in which it climbs.



*The New French Military Medal which William Thaw, an American, was one of the first to receive*

John Guy Gilpatric, the youthful pilot who is equally at home either on the monoplane or biplane has joined the Heinrich Aeroplane Company in the capacity of chief pilot, and will be in complete charge of all testing and demonstration work during Mr. Albert Heinrich's stay in Italy, where he has gone to demonstrate the splendid new Heinrich tractors to the Italian government.

The Heinrich Aeroplane Company is to be congratulated on securing the services of such a capable pilot as Mr. Gilpatric, for his rare skill and wonderful judgment is too well known to need commenting on.

Orville Wright was in New York City last week attending to details of his patent case which comes up for trial June 25th at Buffalo, N. Y. He expressed himself as enthusiastic over the prospects for aviation during the coming year and stated that the wonderful work of the aeroplane in the European war had done more in a few months to advance the art of flying than all the previous work put together.

*Art Smith, with Hollis E. Cooley, Chief of the Special Events Department of the Panama Pacific Exposition, taken just before one of Art's night flights.*







Courtesy of Flying

Some of the Two Hundred and Eight, Provided by the French Public Subscription in 1912-1914

## How the French and German Aeroplane Fleets Were Built By Public Subscriptions

By Henry Woodhouse

Governor Aero Club of America, author of "The Empire of the Air,"  
"The Evolution of Military Aeronautics," "The War in the Air," etc., etc.

The French and German aeroplane fleets of to-day were built largely by public subscriptions collected through public interest.

In February 1912, soon after the first employment of aeroplanes in the French military manoeuvres, when the potentiality of the air service became evident, and even after which the French Government had failed to allow the appropriations necessary to secure an adequate aeronautical organization for the French Army, a public subscription was started.

In every part of France the people—men and women, rich and poor, young and old, and of all beliefs and factions—united their efforts with the Press and political, social, professional and sportive organizations, and all contributed their share to give France a large aerial fleet and make it supreme in aerial armament. At the time, according to the official reports of March 5, 1912, France had 208 aeroplanes and 10 dirigibles in commission.

The National public subscription brought 6,114,846 francs with which the committee in charge bought 72 aeroplanes in 1912; 81 in 1913; 35 in the first three months of 1914. Twenty more aeroplanes were presented directly to the state, making 208 aeroplanes that were secured through the public subscription alone. Public subscription money also paid for establishing 62 landing stations for aeroplanes and for the instruction of 75 aviators.

The public interest created by the subscription was tremendous and led to the immediate consideration of the aeronautical needs of France by the Government.

In March, 1912, the Chambers approved a measure to organize the aeronautical section, which was signed by President Fallieres, and thereafter military aeronautics in France progressed in leaps and bounds. By April 1914, the French army possessed 1,200 aeroplanes and 28 dirigibles, and most complete and efficient equipment.

### Germany's Ascendancy in Aeronautics Due to the Public Subscription of 7,234,506 Marks

Germany's supremacy in the air through the Zeppelins has been a matter of years of standing. Her development in aviation is, however, a matter of recent date and was due principally to the public subscription started by the Aerial League of Germany in 1912.

Previous to the French manoeuvres of 1911, aeroplanes were considered toys in Germany. But the French manoeuvres and the great aeroplane circuits of 1911 proved their military efficiency and Prince Henry fathered a movement to develop an efficient aviation organization. At the time the few aeroplanes flying in Germany were either copies of French machines or of Wrights, with an occasional Etrich monoplane. The motors were all foreign. Under the care of Prince Henry progress was very rapid. The Aerial League of Germany started a public subscription and collected 7,234,506 marks; and the Kaiser was

persuaded to offer 50,000 marks for a competition for German aeroplane motors. The purpose of the League was to train within the shortest time as large a number as possible of aviation pilots to form a reserve and to encourage the general development of aviation in Germany. This it did by subsidizing the constructors, giving 8,000 marks for each able pilot instructed. Following are some of the results obtained:

The number of pilots was 230 at the end of 1912; it increased to 600 by the end of 1913; the constructors of aeroplanes were less than 20 in 1912, they increased to 50 by the end of 1913.

In the contests for duration in the last six months of 1913, 122 German civilian aviators flew 3 hours without stopping; 74, 4 hours; 49, 5 hours; 24, 6 hours; 13, 7 hours; 10, 8 hours; 5, 9 hours; 2, 11 hours; 2, 12 hours; 2, 13 hours; 2, 14 hours; 1, 15 hours; and 2, 16 hours. The developments due to the efforts of the Aerial League led to Reichstag to pass a plan providing for an expenditure of \$35,000,000 for military aeronautics in the following five years.

For 1914 the League planned to spend 3,875,570 marks, as follows:

For duration flights.....	300,000 marks
Colonial aviation.....	100,000 marks
Prizes for military aviators.....	55,000 marks
Prizes for inventions.....	40,000 marks
Motor Contest.....	225,000 marks
Naval aviation stations.....	100,000 marks
Hydroaeroplane contests.....	125,000 marks
Creation of an Aerodrome on the Baltic Sea.....	250,000 marks
Aviation school at Johannisthal.....	60,000 marks
For training new pilots.....	776,000 marks
Aviators' insurance.....	669,570 marks
General expenses.....	170,000 marks

With such inducement and enterprise is it any wonder that German aviation made rapid strides and that German aviators hold all the records for duration up to twenty-four hours of continuous flying?

During the first month of 1914 the inducements offered by the Aerial League of Germany led to the breaking, by German aviators, of all the world records. By the middle of July the non-stop endurance record was carried up to 24 hours and 12 minutes, by Reinhold Boehm, and the altitude record to 26,246 feet, by Heinrich Oelrich. Over one hundred other records, similar to the above were made. For instance, Bassier and Landsmann made continuous flights of 18 hours 11 minutes and 21 hours 49 minutes respectively, in one of which Landsmann covered 1,336 miles, which is the longest distance ever traveled by man in one day. Among the records for altitude was the record of Otto Linnekogel of 21,654 feet—which is about the height of Mount McKinley!



Courtesy of Flying  
Some of the Two Hundred and Eight, Provided by the French Public Subscription in 1912-1914

## Subscriptions for A National Aeroplane Fund

**A**FTER thoughtfully considering the aeronautical needs of this country, the Governors of the Aero Club of America have decided that the gravity of the present situation warrants them in making a direct appeal to the American people for financial aid, to start an aeronautical subscription similar to the French and German subscriptions of 1912-1913, to raise funds with which to develop aviators, acquire a squadron of aeroplanes for the National Guard and Naval Militia of each state, and to get a hundred aeroplanes for the mail-carrying service to inaccessible places—the aero mail-carriers to form a reserve of trained aviators for military service in case of need.

The German public subscription started by the Aerial League of Germany in 1912, netted 7,234,506 marks, and the French subscription brought 6,114,846 francs.

Writing in the issue of May 21st, the editor of the *New York Sun* says, concerning the European subscriptions, "Surely we in America, with our greater resources, can do even better." To insure our doing better, the Aero Club of America has enlisted the co-operation of the Army; the Navy; Post Office Department; Smithsonian Institution; Coast and Geodetic Survey; Coast Guard; Weather Bureau; the Governors of the 48 States; the Mayors and Chambers of Commerce of 1,300 cities throughout the United States; the heads of the National Guard and Naval Militia; 600 Automobile Clubs and organizations, including the Automobile Club of America; the American Automobile Association and the Lincoln Highway Association; 600 Yacht Clubs, and of course, the affiliated Aero Clubs of the United States.

Subscriptions received through various New York papers and direct to the Aero Club of America.

A woman interested in the Movement.....	\$1000.00
Edwin Gould.....	500.00
Cortlandt F. Bishop.....	500.00
Mortimer L. Schiff.....	250.00
Alan R. Hawley.....	250.00
J. C. McCoy.....	250.00
Glenn H. Curtiss.....	250.00
Editors and Publishers of Flying.....	250.00
Editors and Publishers of Aerial Age.....	250.00
Frederick M. Bourne (Through N. Y. Sun).....	200.00
Samuel H. Valentine.....	100.00
S. R. Guggenheim.....	100.00
Robert Glendinning.....	100.00
Frank A. Seiberling.....	100.00
George W. Turney.....	100.00
Lawrence B. Sperry.....	100.00
Chas. Jerome Edwards.....	100.00
A. B. Lambert.....	100.00
Eugene Meyer, Jr., (Through N. Y. Times).....	100.00
J. Stuart Blackton, (Through N. Y. Sun).....	100.00

Miss Helen Ware, (Through N. Y. Tribune).....	100.00
Alvin Untermeyer.....	50.00
F. Harrison Higgins.....	50.00
Howard Huntington.....	25.00
Walter H. Phipps.....	25.00
F. A. R.....	25.00
Isaac M. Ulman.....	25.00
James Byrne.....	25.00
John Dale Cooper.....	25.00
Edgar M. Berliner.....	25.00
Capt. Thos. S. Baldwin.....	25.00
F. H. Russell.....	25.00
Albert S. Heinrich.....	25.00
K. M. Turner.....	25.00
Bernard A. Law.....	25.00
Charles F. Niles.....	25.00
William H. Bliss.....	25.00
Maximilian Schmitt.....	25.00
John C. Breckinridge.....	25.00
William F. Whitehouse.....	25.00
Capt. Hugh L. Willoughby.....	25.00
Robert Pluym.....	25.00
Caleb S. Bragg.....	25.00
William H. Williams.....	25.00
Joseph A. Steinmetz.....	25.00
Miss Harriett C. Wirth, (Through N. Y. Tribune).....	25.00
William E. Scripps.....	25.00
Burt McConnell, (Through N. Y. Times).....	25.00
Miss Katharine Huntington, (Through N. Y. Sun).....	25.00
William Berri.....	15.00
Harold H. Brown.....	10.00
Lt. J. E. Carberry, U. S. A.....	10.00
Lt. F. Dortch, U. S. N.....	10.00
Lt. F. P. Lahm, U. S. A.....	10.00
Howard A. Scholle.....	10.00
A. W. Evarts.....	10.00
J. Wesley Bovee.....	10.00
A. Leo Stevens.....	10.00
Arthur Veel Rose.....	10.00
Waldron Williams.....	10.00
Lt. H. A. Dargue, U. S. A.....	10.00
R. V. Morris.....	10.00
Gen. Robt. K. Evans, U. S. A.....	10.00
A. G. Batchelder.....	10.00
Reginald Sinclair.....	10.00
Frank S. Lahm.....	10.00
W. W. Strong, (Through N. Y. Sun).....	10.00
Chas. Henry Dorr, (Through N. Y. Sun).....	10.00
Dr. Herman Welland, (Through N. Y. Tribune).....	10.00
M. D., (Through N. Y. Times).....	5.00
F. V. Schley, (Through N. Y. Sun).....	5.00
James J. Wardrop, (Through N. Y. Sun).....	5.00
H. P. Marshall, (Through N. Y. Sun).....	5.00
Edmond A. Davenel, (Through N. Y. Tribune).....	5.00
Harold Hone, (Through N. Y. Tribune).....	5.00
Howard Aulich, (Through N. Y. Tribune).....	5.00
Kitty Cosgrave, (Through N. Y. Tribune).....	2.00
M. D., (Through N. Y. Sun).....	2.00
E. Klingsell, (Through N. Y. Times).....	1.00



# An Appeal to Patriotism—Subscription

## Uncle Sam Needs 1000 Aeroplanes and Has Only One Dozen

THE Atlantic Fleet is now manoeuvring without a single aeroplane. On the day President Wilson's note was transmitted to Germany, the Navy had only three aeroplanes in commission, and the Army barely twice as many. Only half a dozen of the licensed aviators of the United States have made flights of more than fifty miles, and none know even the rudiments of military aeronautical requirements. Our Army, Navy, National Guard and Naval Militia have had no experience in handling aircraft or operating with them.

And there are no prospects of relief from this predicament within the next year, or until Congress can again convene and act. Even then, Congress may ignore the aeronautical needs of this country, as it did during the last Session, when only \$1,300,000 were appropriated for the Army and Navy—less than enough to equip a single aeronautical center.

Every military and naval authority in Europe now recognizes that a navy without aerial eyes is as helpless as a submarine without a periscope; an army without aerial scouts and aerial auxiliary can be corralled and slaughtered like a herd of sheep; a harbor or naval station without aerial defense is at the mercy of every puny submarine, and a nation without aerial forces is as helpless as was the Lusitania at the time of her sinking.

To provide an aeronautical reserve, the Governors of the Aero Club of America decided to start a public aeronautical subscription similar to the French and German subscriptions of 1912-13. These netted \$1,222,969 and \$1,808,626 respectively, and were used to train aviators and to procure aeroplanes. As the *New York Sun* says editorially, "Surely we in America, with our greater resources, can do even better."

## Sixteen Thousand Men Not Sufficient to Supply British Forces With Aeroplanes

SIXTEEN thousand men working to their full capacity are unable to supply the British forces with all the aeroplanes they need.

Sir John French, with fifteen hundred aeroplanes and aviators under his command, finds need for more. His official communication says:

*"I feel that no effort should be spared to increase their number and perfect their equipment and efficiency."*

"The work performed by the Royal Flying Corps has continued to prove of the utmost value to the success of the operations. Almost every day new methods of employing them, both strategically and tactically, are discovered and put into practice. The development of their use and employment has indeed been quite extraordinary."

The combined output of sixteen thousand men is not sufficient and Sir John French, in his reports, in which he continually expresses his appreciation of the increasing value of the air service, repeats that more aeroplanes are needed.

If England with 1,500 aeroplanes and aviators and the output of sixteen thousand men cannot supply sufficient aeroplanes for its forces—what would Uncle Sam—who has only a dozen aeroplanes—do in case of immediate need?

It is to meet this need that an appeal is made to the public for subscription.

*The United States, the birthplace of Flight, the plane, the first hydroaeroplane and the first flying Mr. John T. McCutcheon illustrated Uncle Sam dropped further back until now he ranks last among the nations—very much behind Japan, China, Switzerland, and Germany. Uncle Sam last where he should be first, and having first, he should be last.*

MARCH 2, 1913.



[Copyright: 1913:]

Address your subscription direct to The Aero Club of America, 297 1



# e to the National Aeroplane Fund

...ry that gave to the world the first practical aero-  
... is last in aeronautics. In this cartoon, in 1913,  
...ul position. He has not advanced since—he has  
...ations—behind all the first and second class powers  
...ia and Morocco. We cannot afford to have Uncle  
...to secure relief from Congress we appeal to the

Tribune

A \*



T. McCutcheon

## Public Subscriptions Built French and German Air Fleets

THE French and German aeroplane fleets of to-day were built largely by public subscriptions and through public interest. In February 1912, soon after the first employment of aeroplanes in the French military manoeuvres demonstrated the potentiality of the air service but the French Government failed to allow the appropriations necessary to secure an adequate aeronautical organization for the French Army, a public subscription was started.

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Just as the people in every part of France and Germany—men and women, rich and poor, young and old, and of all beliefs and factions, united their efforts with the Press and political, social, professional and sporting organizations—we here in America can do the same. The *New York Sun* says: "Surely we Americans, with our greater resources, can do even better."

The American National Aeroplane Fund will be used to train 1,000 aviators to provide aviation corps for the National Guard and Naval Militia of the States and U. S. Possessions, and put 100 aeroplanes in use for the mail-carrying service to inaccessible places, forming an aeronautical reserve which, while being used daily for peaceful purposes shall be ready for military service in case of need.

on Avenue or through your favorite newspaper or your club or bank



# The Sloane Military Tractor Biplane

By Walter H. Phipps

Another addition to the rapidly increasing ranks of American military tractor biplanes is the new Sloane machine, an interesting type of rather unusual design.

As may be seen from the accompanying drawing and photograph the machine somewhat resembles a Morane-Saulnier monoplane, in which the monoplane surface has been replaced with a biplane cellule and the nose of the fuselage elongated to take a vertical, water-cooled motor. Following characteristic Morane-Saulnier practice the fuselage tapers to a horizontal edge at the rear where it carries in special steel brackets the regulation Morane type balanced elevators, with no stabilizing medium other than that furnished by the flat top and bottom surface of the fuselage itself.

The Sloane tractor biplanes are made in two types, viz.:— Model E2, a two-seater, which is the subject of the accompanying drawing and photograph, and Model E, a single seater speed scout. Both types are adapted for either rotary air-cooled motor or vertical and V-type water-cooled engines.

### General

Both the Model "E-2" and Model "E" tractor biplanes have been designed to meet military requirements, where it is desired to carry large loads with a maximum of speed range. They combine the best features of the Sloane Military Monoplanes combined with advanced principles in biplane design.

The Model "E-2" Tractor is arranged for pilot and observer seated in tandem and is equipped with either double or single control. It is equipped with either a 110 H.P. Gyro or 90 H.P. Kirkham Motor, or other engine of like horsepower. Its estimated flying range is from 40 to just over 75 M. P. H.

The Model "E" Sloane Tractor is a single seater fast scout, having a fuselage modelled on the lines of the E-2 type. It has the head resistance cut down to a minimum so that it is expected to be very nearly as fast as the Sloane monoplane. For a biplane, it is unusually light yet strong enough to be able to stand up well under stress of hard service. Equipped with a 90 H. P. Kirkham Motor, the Model "E" Tractor has an estimated flying range of from 45 to 90 M. P. H., and a speed range with full load of four hours' fuel of 50 to 85 M. P. H.

### Planes

The planes of the Sloane Tractors are similar in design and construction to the Sloane monoplane wings. The frame-work is built up of ash and spruce; the front beam measuring 2½ inches deep by 1½ inches thick. The ribs are close together, the joints securely mortised and fastened and the whole internally braced with heavy wire. The planes are covered with unbleached linen treated with Naiad Aero-Varnish which makes them water and oil proof. The planes of the Model "E-2" have a spread of 36'0", and the Model "E" have a spread of 25'; the supporting surfaces being 400 sq. ft., and 250 sq. ft. respectively.

### Fuselage

The fuselage which follows Morane-Saulnier practice is quite short, measuring only 22 feet in length. It is of rectangular section—30 inches wide by 35 inches deep; the cockpit tapering longitudinally to a flat horizontal pointed section 15 inches wide

at the rear. The longitudinals are of ash 1¼ inches square in front, tapering to 1-inch at the rear. The fuselage is braced by eight sets of uprights which are joined and fastened by special clamps without weakening the longitudinals. The whole fuselage is strongly cross wired and braced with additional wooden diagonals at the points of greatest stress. The bottom set of planes are attached directly to the fuselage, while the upper planes are attached to short uprights mounted on the top of the fuselage. The streamline effect of the fuselage in front is preserved by enclosing the whole nose with motor and mounting in a round streamline cowl of aluminum. Additional streamline windshields protect the cockpits and prevent the wind from blowing in the pilots' faces as well as shielding from inclement weather the dash on which the full equipment of instruments is mounted.

### Motor Mounting

When the 110 H. P. Gyro Motors are used, they are mounted in special ball bearing brackets in the extreme nose of the fuselage. They are partly covered by the oil shield which may be readily detached for inspection or removal of the motor. When a water-cooled motor is used, the nose is slightly lengthened and the engine mounted on engine beds 3 inches deep by 2 inches thick. These are supported in front by steel plates and at the rear by strong cross braces; while in the middle they are braced to the longitudinals or fuselage by strong uprights.

### Landing Gear

The landing chassis consists simply of two pairs of struts arranged V fashion and carrying two 26-inch by 3-inch streamline disc wheels mounted on opposite ends of a tubular axle, together with a single wheel located well forward and similarly supported. The wheels are attached by rubber band shock absorbers; the whole arrangement being very flexible and capable of taking up shock sideways as well as upwards. The tail is supported by an ash skid sprung on with rubber shock absorbers.

### Controls

The control is the regulation Deperdussin wheel and foot bar type which operates by a turning of the wheel the ailerons, by a fore and aft movement the elevator and by foot bar the rudder. Any regulation system of control can be furnished when it is desired.

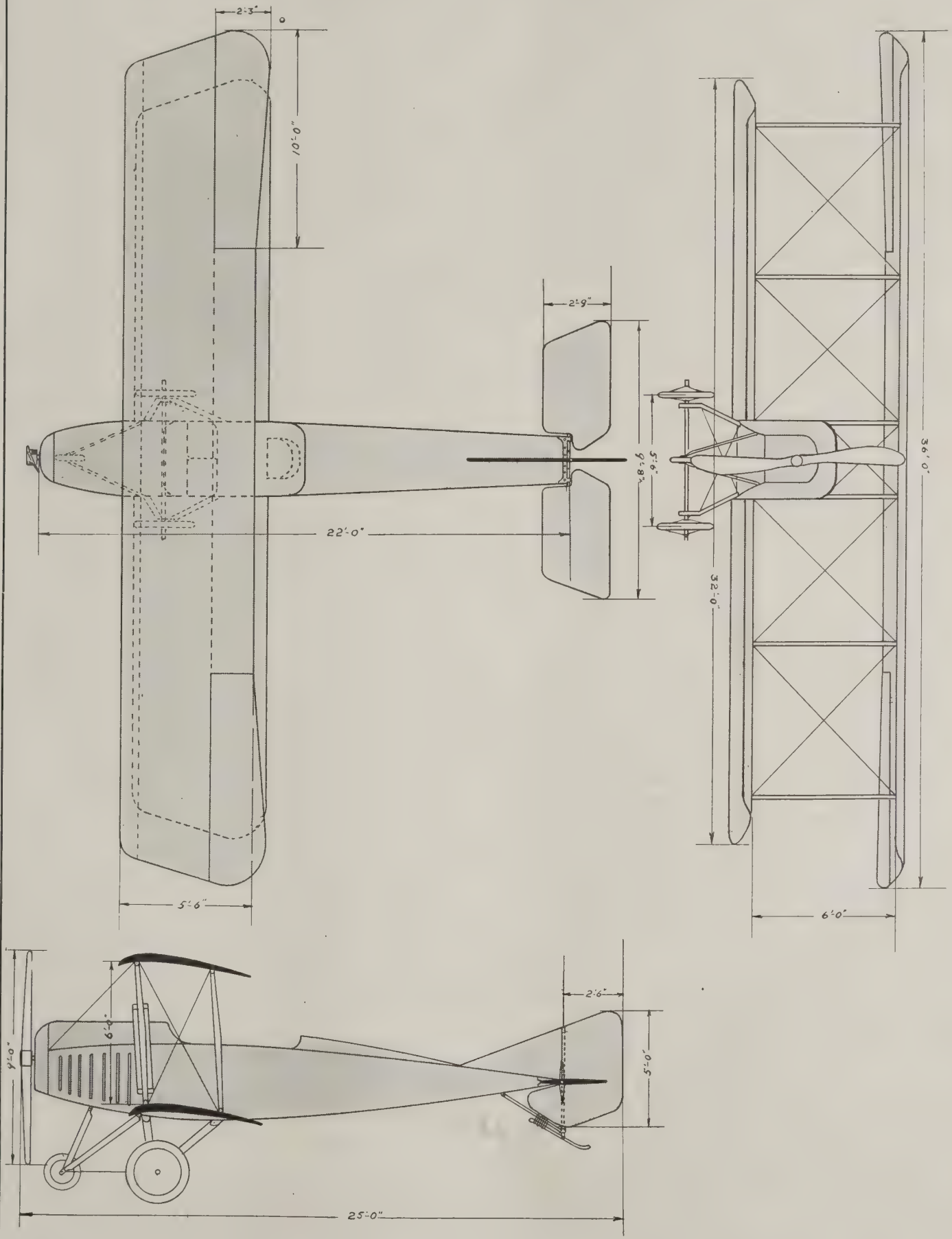
### Dimensions

	Model "E-2"	Model "E"
Span.....	36'0"	25'0"
Chord.....	5'6"	5'0"
Ailerons (2).....	10x2'6"	(2) 8'x2'6"
Length Over all		
With Rotary Motor.....	23'0"	23'0"
With Vertical Motor.....	25'0"	25'0"
Rudder Area.....	13 sq. ft.	10 sq. ft.
Elevators.....	22 sq. ft.	18 sq. ft.
No. Passengers.....	Two	One
Fuel Capacity.....	4 or 5 hrs.	4 hrs.
Speed Range—Loaded.....	40 to 75 M.P.H.	50 to 85 M.P.H.
Weight, packed for shipment, est.,	1,700 lbs.	



The new Sloane Military Tractor Biplane equipped with a 90 h. p. Kirkham motor which was tested by John Guy Gilpatric. Note the novel 3-wheel landing chassis and the short fuselage.

Scale Drawings of the Sloane Military Tractor Biplane







# MODEL NEWS

Edited by WALTER H. PHIPPS



## CLUBS

**THE AERO SCIENCE CLUB OF AMERICA**  
29 West 39th Street, New York City

**PACIFIC NORTHWEST MODEL  
AERO CLUB**  
915 Ravenna Boulevard, Seattle, Wash.

**LONG ISLAND MODEL AERO CLUB**  
401 Grant Ave., Cypress Hills, L. I.

**BAY RIDGE MODEL CLUB**  
6730 Ridge Boulevard, Bay Ridge, Brooklyn

**CONCORD MODEL AERO CLUB**  
Concord, Mass.

**SUMMIT MODEL AERO CLUB**  
26 Shady Side Avenue, Summit, N. J.

**THE ILLINOIS MODEL AERO CLUB**  
Room 130, Auditorium Hotel, Chicago, Ill.

**TEXAS MODEL AERO CLUB**  
517 Navarro St., San Antonio, Texas

**MILWAUKEE MODEL AERO CLUB**  
402 Bradford Ave., Milwaukee, Wisc.

**CONCORD MODEL CLUB**  
c/o Edward P. Warner, Concord, Mass.

**AERO CLUB OF ST. LOUIS**  
Columbia Bldg., 8th & Locust Sts.,  
St. Louis, Mo.

**MODEL AERO CLUB OF OXFORD**  
Oxford, Pa.

### The Lauder Duration Model

The Lauder Duration model illustrated in the accompanying drawing and photograph was constructed by Wallace A. Lauder of Summit, N. J., a well-known model flyer who is noted for his consistent performances with models of extremely light weight.

The model which is the subject of this description weighs complete with rubber only 5 ounces and is credited with making a duration of 195 seconds in a contest held at Murray Hill, N. J., on May 8th.

It was not until Myers and Tiffany had recorded smashes that Lauder's model performed well. The model's flights for the afternoon were 105, 115, 127, 134, 142 and 195 secs. Distances of about half a mile were made, the model circling continually in a very slight wind. Altitude of flights was about 250 ft.

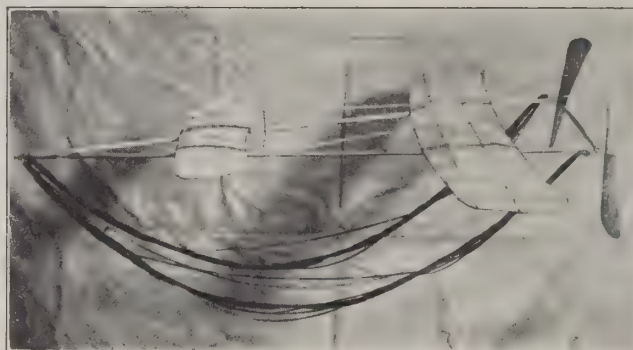
#### Description of Model

The main frame which measures 40 inches long is built up triangular fashion, as shown, of two very light spruce main sticks, braced with light guy wire to stiffen it. The rear cross brace which is bamboo serves as a bearing spar and takes two regulation combination bearings and shafts. It measures 13½ inches wide which leaves just enough room for the two twelve-inch propellers to clear in the centre.

The main planes are quite large and are a wonderful example of light weight construction. They are both slightly back swept or V shaped as may be seen, and are built up double surfaced. The front plane or elevator is unusually large measuring 15 inches wide by 4½ inches chord and is attached quite far back as shown. It is set at a slight lifting angle and held down to the frame by rubber bands. The rear plane measures 28½ inches wide by 6½ inches chord and attaches flat to the frame by rubber bands so that it may be shifted back and forth for adjustment. The tips of the rear plane are of slightly greater chord than the rest of the plane and are bent upward at a slight negative angle as shown. The propellers which are cut from blanks measure each 12 inches diameter and have a very high pitch with small blade surface and are driven by ½ inch flat rubber furnished by the Model Supply House.

The actual weight of the model is 3¼ oz., and the weight of the rubber used 2 oz., making the total flying weight only 5½ ounces for approximately 245 square inches.

In subsequent issues it is hoped to run the drawings and description of other



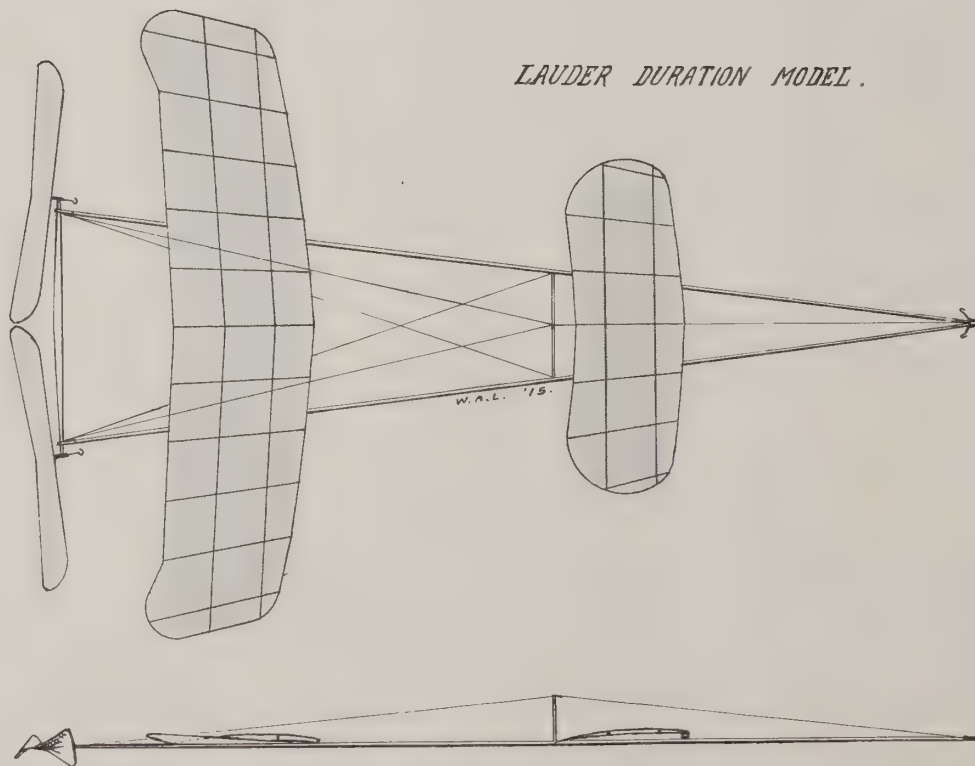
*The Lauder Duration Model*

models and all model flyers are urged to co-operate by sending in any drawings, photographs or descriptions which they think would be of interest.

### Aero Science Club Bulletin

By G. A. Cavanagh

A very successful meeting of the Aero Science Club was held on May 22nd, despite the inclement weather. Many members were present, five new members were enrolled and a number of applications were received. Mr. Durant reported that the hangar at Oakwood Heights was now ready for occupation, and a number of members are expected to go down Sunday, May 30th, to look things over. Mr. Walter H. Phipps submitted a design for a closed-in tractor biplane which design was adopted by the Club. Mr. Phipps and Mr. Mc



*LAUDER DURATION MODEL.*

*Duration Model Constructed by Wallace A. Lauder of Summit, N. J., which Is Credited with Having Made a Duration Flight of 195 Seconds*

Loughlin will draw up final specifications for the Club's new machine and Messrs. Frank Schoeber and Rudolph Funk were appointed to look into the matter of obtaining for the Club the use of a shop in Brooklyn which shop is within easy reach of many members. A report is expected at a coming meeting. Mr. John McMahon was on hand with a small three cylinder rotary motor of his own construction. The motor is three inches in diameter and possible of making between 1,500 and 2,000 R.P.M. With propeller the engine weighs but 1½ ounces. The motor embodied a number of unusual features two of which were the doing away of the crankcase which insures extreme lightness and the exhaust valve ports being in the side of the cylinders. The motor proved to be of much interest to the members and it is believed that satisfactory results will be obtained when Mr. McMahon uses the motor in a large model which he is building and which he hopes to enter in the Efficiency Contest. Messrs. Schoeber and Funk are also building a new compressed air motor and model which they expect to have ready for the contest as their last model was completely wrecked when the tank of the power plant blew up while they were preparing it for a demonstration at the last meeting.

Rules for the Efficiency Contest which were submitted by Mr. Cavanagh were adopted. Typewritten copies of the Rules will be sent to all out of town members. Many of the members have models under construction for the contest which will be held on July 4th. Some contributions have been received from the members and more are expected. It is believed that large cash prizes will be awarded the full amount of which will be published in a later bulletin. To make this contest the biggest success ever all members are urgently requested to prepare for participation and attend the meetings on Saturday evenings at the Engineers Building. A stock of club pins will be had in about a week or two and all members desiring them should communicate with Mr. Schultz.

For further particulars address the Secretary, G. A. Cavanagh, 49 Lott Ave., Woodhaven, L. I.

#### Illinois Model Aero Club

At the last Friday night meeting the club developed a most interesting plan

#### CALIFORNIA NEWS

The feature of aviation in California at present is Art Smith's spectacular flying at the Panama-Pacific International Exposition. He has been making five flights a week, every one exactly at the minute advertised, and looping in and out of clouds or fog as easily as on clear days. On days on which Smith is advertised to fly the Exposition notifies crowds on the grounds a quarter hour before the flight by firing bombs and sounding a huge siren on the Machinery palace. These are signals for virtually suspending activity in all parts of the grounds, for the crowds flock to the Marina, as the waterfront parking is called, and line the park where Smith makes his ascents and landings. His day flights are characterized by numerous loops, cartwheels and tumbling, during which he writes his manoeuvres on the sky by means of smoke trails which outline the loops and dips distinctly. Smith's illuminated flights at night are easily entitled to designation as the most spectacular flying ever seen in America. The biplane is illuminated by red lights as the aviator climbs. When well up these are changed to brilliant white lights, and on the loops these are supplemented by rockets and other fireworks which make the aeroplane appear exactly like a great comet. On several occasions Smith has flown in cloudy or rainy weather at night, but the crowds have brought their umbrellas and remained loyal to him. The spectacle of the aeroplane darting suddenly from a cloud and leaving a trail of bright fire and stars behind is declared by old showmen at the Exposition "zone" to be the most thrilling "act" they have ever seen. Smith and his manager, W. S. Bastar, have had every assistance possible from Hollis E. Cooley, chief of the department of special events, and Thornwell Mullally, chairman of the special events committee, of the Exposition, under whose auspices the flying is conducted.

Silas Christofferson is in Mexico making a demonstration for the Carranza forces. He expects to return to San Francisco with an order for a number of aeroplanes for Carranza. The Christofferson aviation factory at San Francisco has a biplane with actively revolving propeller mounted on the roof, and as the factory is on the main boulevard to the Exposition grounds it attracts the attention of thousands of visitors.

Charles H. Paterson, one of the vice-presidents of the Pacific Aero Club, is out of active aviation until July 1 because of a broken wrist. Paterson was flying at his field near Alameda, Cal., and sustained a fall of eighty feet which wrecked his biplane and gave him a number of minor injuries.

Robert G. Fowler has substituted pontoons for the boat body on the seaplane which he flies personally at the Panama-Pacific Exposition. He is doing night flying as well as day work, and is carrying passengers.

Lester E. Holt, who formerly flew at Cicero field near Chicago, and who holds the Los Angeles cross-country record of twenty-nine consecutive daily flights, is now in San Francisco. He is endeavoring to arrange a summer exhibition tour.

Fred DeKor, one of the first Americans to loop the loop, is in Los Angeles. He is planning to tour the Middle West this summer with a new tractor biplane, using a Gyro motor.

Colonel W. F. Cody ("Buffalo Bill") was so thrilled with Art Smith's flying, which he witnessed at the Exposition recently, that he asked for an introduction in order to congratulate the young aviator. The old Indian fighter presented to Smith a treasured gold nugget which he had carried for a quarter of a century to show his appreciation of Smith's daring. The cowboys and Indians on the Exposition amusement street frequently steal off to observe Smith's flights, which seem to have a peculiar

for a membership campaign. Mr. Borkland, who once belonged to the New York Model Aero Club, and who for the past year has been vice-president of the Illinois Model Aero Club, made an inspiring speech concerning club activities and club membership which carried all his listeners with him for a unanimous vote of acceptance. The substance of his plan was this:

With the consent and co-operation of the high-school officials of Chicago, a lecturing and exhibition party will be made up from our members for the purpose of visiting each high school and endeavoring by demonstration of model aviation to obtain new members for the club. Mr. Borkland has promised to interview the Ass't. Superintendent of schools of Chicago. It was also reported by the contest committee that by next meeting a printed schedule of 1915 meets would be ready for distribution. Owing to the absence of the scientific committee, the paper on rubber testing was postponed.

#### Concord Model Aero Club News

On May 16th James P. Borland went out with a new machine, terribly over-powered, starting every flight with one or more loops, but still making a distance around 1,000 feet in calm air. May 19th Mr. Bean was trying out a new machine at the Harvard Stadium in a very strong wind. He secured a duration of 65 seconds when the machine was barely half wound up, time to a landing on a roof of a house. The wind was so strong that the distance was over 1,200 feet although the machine was headed directly into the wind during almost the entire flight and was carried backwards by it. This machine shows remarkable stability and should make some sensational distance records when we find a field large enough to hold it.

The Concord model flyers are all much interested in the proposed National Contest and there will be about fifteen entries from the Boston district.

Mr. Bean and Edward P. Warner expect to be in New York the 4th and 5th of July and are looking forward with pleasure to meeting the Metropolitan Aeromodellists.

fascination for them. On one occasion the aviator's looping completely broke up the parade of the "101 ranch," as the cowboys and stage drivers insisted on waiting to see Art Smith get down to the ground.

The balloon committee of the Pacific Aero Club is endeavoring to make arrangements for a series of altitude and duration flights at San Francisco this summer. Special facilities for ballooning have been provided at the Panama-Pacific Exposition grounds.

#### Army Aviation Notes

A WAR Department order, dated April 27, 1915, has designated a sea coast battery at Fort Miley, California, as *Battery Loren H. Call*, in honor of that officer who was killed July 8, 1913, while making a flight in an aeroplane in the line of duty.

This token of appreciation is received at this station with gratitude for the honor done an able officer and esteemed comrade.

Navigation of the air will probably never become free from great risk, but the dangers are magnified by public ignorance and the popular horror of death by falling. The percentage of deaths has steadily decreased since the introduction of the tractor type of machine, loss of public interest in reckless, sensational flying, the growth of sane, careful, conservative airmanship, and the scientific study of aeronautics. To the pioneer, all honor and glory, for too much credit cannot be given the dauntless men that undertook to conquer an unknown element, who groping blindly in the dark, blazed the air lanes, with their bones and ashes, for those who were to follow. No one appreciates fully this debt all mankind owes them unless it be a flyer who knows by experience the many pitfalls that beset the most skilled. To these men, who go to war in time of peace, so to speak, the reward lies, as always, within themselves, but if duty entails risk and danger, loss and sacrifice, appreciation makes that sacrifice easy to bear and glorifies the prosaic thing we call duty.

The first one of the Curtiss Model JN 100 H.P. tractor biplanes, arrived at this station on May 10. This machine is to undergo rigid tests for compliance with all specifications before acceptance. Mr. Raymond V. Morris, chief pilot of the Curtiss California Company, has charge of the machine for the manufacturer and will put it through the tests.

Officers of the First Aero Squadron are being given instruction in driving motor trucks and motorcycles. The organization will embrace a transportation unit of from 16 to 20 motor lorries or vans and 6 motorcycles. Hence, driving has been made one of the requirements of the training of officers before assignment to the Squadron.

At present the First Aero Squadron consists of 11 officers, all of whom are junior military aviators and 90 enlisted men. Three officers are in the intermediate class and will probably be available for assignment to the Squadron by July 1st. There are 13 student officers in the School, 10 of which are undergoing preliminary training.

A board of officers is now engaged on a uniform for military aviators. At present the outfit consists of watch, aneroid, compass, helmet, gauntlets, leather coat, goggles, and service uniform. The latest types of aircraft are provided with an elaborate instrument equipment, eliminating the necessity of carrying watch, aneroid and other bulky instruments strapped to the wrist and leg. Greater convenience and comfort are sought for the airmen, as the introduction of refinements has demonstrated their value in increased flying efficiency.





# Foreign News

Edited by L. d'Orcy



## France

A battle flag of a Zeppelin is the latest addition to the collection of military trophies which are housed in the Hotel des Invalides. The flag is about ten feet long and bears a black cross on a white field, with the German tricolor in the upper left hand corner. It was taken from the Z-VIII, after that airship had been brought down by French anti-aircraft guns near Badonviller, Lorraine.

The German battery of 15-inch guns which bombarded Dunkirk some time ago has been located by a French aviator who flew over the spot at a height of 450 feet.

The airman took photographs showing the exact position of the guns, after which 2,000 shells were fired on the casemates sheltering the guns, which are supposed to have been destroyed.

France's great gun works at Le Creusot and the government arsenal at Bourges are both especially prepared to repel Zeppelin raids, says the Paris correspondent of the *N. Y. Times* who has visited these establishments. "Guns are mounted in all districts. Le Creusot is the only place I have seen where the guns show openly; there is no attempt at concealment. On entering the city in an automobile I could see their long barrels standing out against the skyline in every direction. Military observation outposts are stationed miles outside the city, with telephone connections to the batteries, for the purpose of warning against a Zeppelin's approach."

## Germany

Two Zeppelin airships are reported to have been sent by Germany to the Austrian naval base of Pola in order to provide the Austrian fleet with fast scouts.

It will be remembered that some time ago a Swiss dispatch reported the loss of a Zeppelin with her entire crew in the Adriatic Sea.

A message from Lausanne says that the German authorities have suspended all traffic on Lake Constance for a grand rehearsal of the measures which are being adopted to prevent another raid on the Zeppelin works at Friedrichshafen. Included in the arrangement are thirty motor boats, armed with anti-aircraft guns, which have been brought there from the naval base of Stettin.

A neutral correspondent of the *Times*, who has already given valuable accounts of Germany's airship activity, says "Nebelbomben," or cloud bombs, the latest production of the highly skilled scientists in that country, are to be used in an attack on London.

He says workers in the factories, who are usually most secretive, do not conceal their enthusiasm for the invention which explodes in the air and spreads a large area of foglike cloud, dense enough to hide an airship and obscuring the most powerful searchlights.

The "Nebelbomben" can also be used in daylight. They have a time fuse which explodes at calculated distances above the earth and emits a fog with incredible rapidity.

The correspondent confirms the recent report that five or six new Zeppelins have been constructed at Friedrichshafen especially intended for London. Recent journeys have proved the practicability of the plan and the Hoechst and Badensche chemical factories, among the most proficient in the world, are working hard in connection therewith.

The German Air Service, in preparing the threatened raid of a Zeppelin fleet upon London, is displaying feverish activity in Belgium, where numerous aerial bases have been established, the chief ones being at Brussels, Antwerp and Ghent.

Painstaking care has been taken to make the new Zeppelin sheds practically invisible from above and prevent thereby the Allies' airmen from discovering them. Thus the new shed at Brussels is made up so as to look like an ordinary factory, while another shed at Ghent is entirely hidden by a great number of logs. The shed erected near Antwerp has a roundish roof covered with grass, which makes it look from afar like a hill.

Of the two Zeppelin airships which raided Ramsgate and Dover on May 17, one has been destroyed and the other badly damaged before they were able to reach their aerial base in Belgium. Another Zeppelin that attacked Calais on the same day was also brought down.

The destruction of the first Zeppelin is told in a dispatch to the *Daily News* of London as follows:

"Just after dawn on May 18, a Zeppelin flying from the direction of the English coast was sighted in the English Channel by a French torpedo boat. It was flying slowly at no great height and offered a good mark for the gunners of the tiny boat, who fired several shots, one at least taking effect.

"Immediately afterward the huge airship was observed to have a decided list, which increased momentarily until the whole ship appeared to crumple up. It made one or two frantic dives and fell into the sea four miles from Gravelines, within sight of the Gris Nez light. The Zeppelin and its crew disappeared beneath the surface and a little while afterward several bodies were observed floating on the surface."

How the other Zeppelin was damaged by a squadron of seaplanes is described in an official note published by the British Admiralty, which reads as follows:

"The Zeppelin that attacked Ramsgate early this morning (May 17) was chased off by Eastchurch and Westgate machines as far as West Hinder light-ship.

"When off Nieuport, Belgium, she was attacked by eight naval machines from Dunkirk. Three machines were able to attack her at close range fire. Flight Commander Bigsworth dropped four bombs when 200 feet above the airship. A large column of smoke was seen to come out of one of her compartments.

"The Zeppelin then rose to a great height, 11,000 feet, with her tail down and is believed to be severely damaged. All our machines were exposed to a heavy fire from the Zeppelin. There were no casualties."

A dispatch to the *Daily Chronicle* gives the following account of the fate of a third Zeppelin, which attacked Calais on May 18:

"At midnight two Zeppelins and two Taubes were seen coming from sea toward Calais. They had scarcely time to drop a few bombs when they were discovered by the searchlight and were subjected to a violent cannonade. The aerial invaders made a desperate attack, and when driven off came back again.

"The Zeppelins were continually fired at with shrapnel and were obliged to fly at a great height to avoid being hit. For a time they escaped injury, although one could see the shrapnel exploding around them.

"The Zeppelins finally flew in the direction of Boulogne, followed by the two Taubes. When passing near Marquise, however, the battery at Cape Gris Nez succeeded in hitting one Zeppelin with a shell. The invaders turned back at once and passed once more near Calais.

"The winged Zeppelin was unable to reach the German line and fell on the beach at Fort Mardick, about two miles from Dunkirk. Forty men on board of the craft were taken prisoners, among them being seven officers. The machine was completely wrecked."

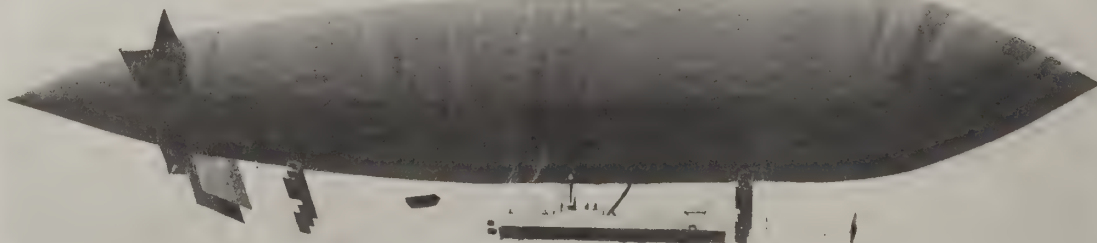
On the other hand a report from Rotterdam states that a fourth Zeppelin, supposed to be one of the two which raided Ramsgate on May 17, was attacked by Allies' aeroplanes near Bruges on the following day. The aeroplanes finally were driven off by the aviation guns of Bruges and the dirigible reached its shed at Berchem in safety.

Another Zeppelin airship was accidentally crippled in Belgium, when on May 13 she fell into the Gierlesche woods. Two of the crew were thrown out and severely wounded when the airship reached the ground. Afterward the machine was dismantled and shipped away in sections to Germany.

## Great Britain

Returns from British recruiting offices show that the various German aircraft raids upon the British Isles have proved a great stimulant to enlistment in the British army.

An English gun factory has just produced an anti-airship shell which they claim is specially suitable for bringing down Zeppelins. Unlike the French Guerre bomb, which is of the incendiary kind, the new English bomb's destructive action results from its being able to tear open a wide section of an airship hull.



The French Army Dirigible Vincotenot Which Bombarded, Sometime Ago, the Military Railway Junction at Trevers. This Airship Was Built in 1911, and is of the Non-Rigid Astra-Type.





Aeronitis is a pleasant, a decidedly infectious ailment, which makes its victims "flighty," mentally and physically. At times it has a pathologic, at times merely a psychologic foundation. It already has affected thousands; it will get the rest of the world in time. Its symptoms vary in each case and each victim has a different story to tell. When you finish this column **you** may be infected, and may have a story all of your own. If so, your contribution will be welcomed by your fellow **aeronuts**. Initials of contributor will be printed when requested.

## SOME RECORD

By Gordon Bruce

Gentlemen of the Aero Club of America; flyers of the world; we have with us to-day Lieutenant E. H. Bequer who says he is of the Royal Flying Corps of Great Britain. By his own admissions, made in an interview given out in Buffalo and printed in yesterday's papers, Lieutenant Bequer is the marvel of the age. Shattering world's records according to the alleged statements of the airman, is to him something less than swatting so many flies.

Here is his accomplishment, in a nutshell. Three months ago, in the dead of winter, he left the deck of a British transport, twenty miles off the Long Island shore, flying alone in a land machine. It was a dark night, exactly suitable for such an exploit.

Setting his planes or sails or fins or whatever he terms them, toward the west, the doughty Lieutenant muttered, "Vancouver or bust," and was off. The first stop was made owing to engine trouble, 200 miles northwest of New York City. The difficulty was remedied and just as dawn was breaking, the flier sailed across the line into Canada, having passed over Buffalo at a height of 3,000 feet.

How Lieutenant Bequer crossed the continent in four days is a deep dark secret, owing to the rigid censorship of the Dominion government. But—take it from him, he arrived at Vancouver in fine form, taking his station he says, on Vancouver Island.

"I had been there three days," continues the interesting narrative, "when a machine, released from a German vessel, appeared." He then explained that he had been sent to foil a plot on the part of the Germans, to raid Vancouver and had expected the hostile aviators.

"I went out to meet the enemy," he confided, "and we clashed thirty miles from Vancouver. Both opened fire and they got me in the leg. That interfered somewhat with the manipulation of my controls but we kept at it. When another bullet struck me in the abdomen, however, I was beaten and flew away, landing safely. The German machine turned back to sea as I approached land."

Thrilling as is the Lieutenant's account of the fight, the story of his miraculous trip over the wilds of Ontario, the boundless prairies of Manitoba, Saskatchewan and Alberta; and last but not least, his perilous flight over the Rocky Mountains, via Kicking Horse pass and down the western slope into British Columbia, would be vastly more instructive.

Also, he seems to omit the little detail that Vancouver Island is something like 80 miles from Vancouver and his flight to meet the enemy, thirty miles off shore, must have taken him 110 miles from that city. So the exploit was more remarkable than the modest officer himself admits.

Yesterday, aeronautical experts were wondering what "British transport the young man flew from, what wonderful plane and motor were used, where he obtained fuel and now that he has got so many records what is he going to do with 'em?"

Give a man an aeroplane and you can't tell what he's going to do. He may fly over the highest mountain, or across a continent or break all the world records—or only break his neck. It all depends on the man, the aeroplane and the circumstances.

We know some fellows who are up in the air most of the time.

Many folks are closely interested in aviation. That's the trouble; their interest is so close that aviation can't get a smile from them without paying a small fortune for it.

All of which, aviation being in its infancy, is like stealing an infant's milk.

Geel! Won't the baggage man grin when we get to carrying freight by aeroplanes? He'll be able to drop your trunk fast, high, hard—any old way; and the drop will be effective every time.

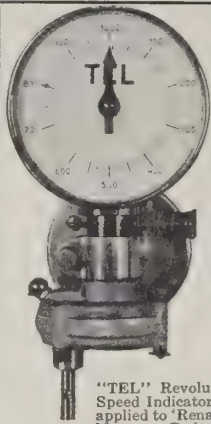


Courtesy Collier's Weekly

## IN PREHISTORIC MANHATTAN

"The paper says they've introduced a bill forbidding pterodactyls to fly over the island and limiting the height of dinosaurs."





"TEL" Revolution Speed Indicator as applied to 'Renault' Motor. Reducing gear-box attached to foot of instrument.

# "TEL" INSTRUMENTS

for indicating and recording the number of revolutions per minute of the propeller attached to  
**AEROPLANES AND DIRIGIBLES**

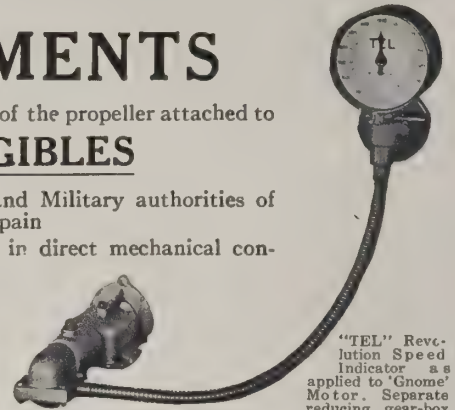
Over 2,000 supplied during the last 18 months to the Naval and Military authorities of Great Britain France, Russia, Italy and Spain

"Tel" instruments are of conjugate movement, the pointer being in direct mechanical connection with the driving shaft of the engine

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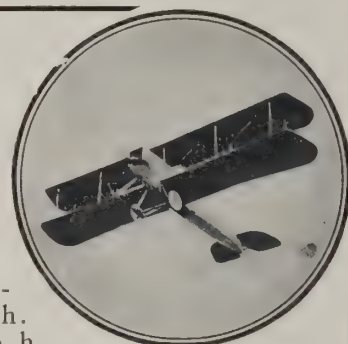
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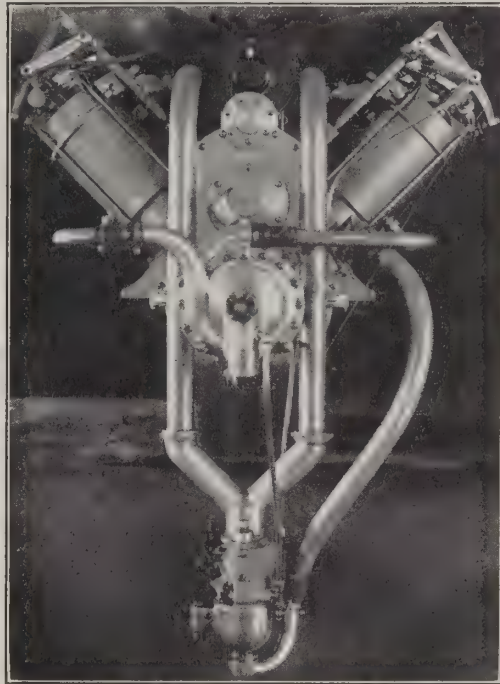
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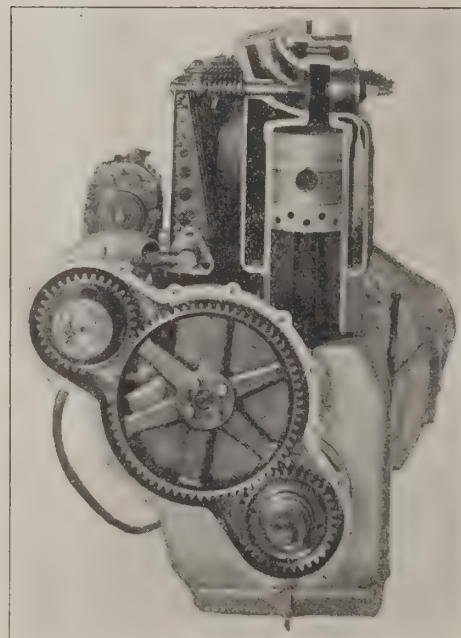
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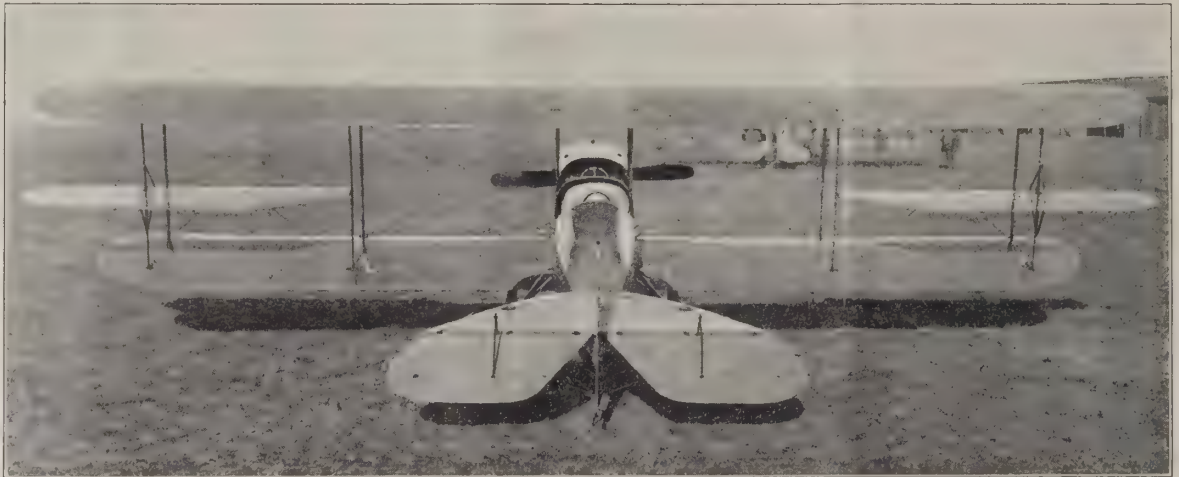
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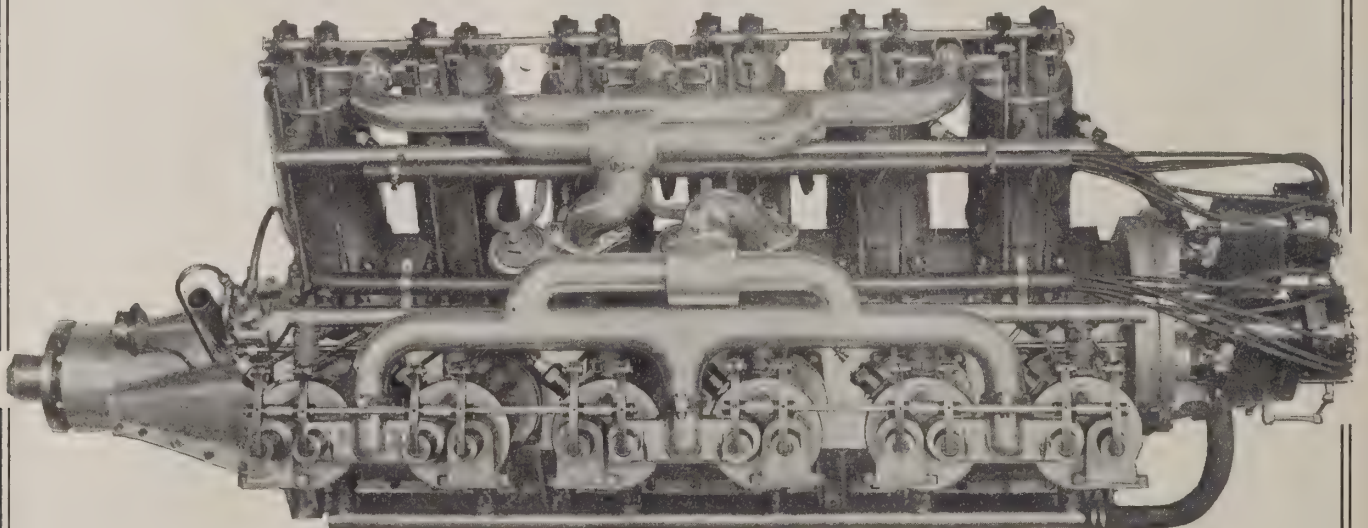
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*Top View*

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PUBLISHED WEEKLY BY THE AERIAL AGE COMPANY, Inc., 116 West 32nd Street, New York City

Entered as Second-Class Matter March 25, 1915, at the Post Office at New York, N. Y., under the Act of March 3, 1879

VOL. I.

NEW YORK, June 7, 1915

No. 12

## Nation Wakens to Need of National Defense and Value of Aeronautics

THE nation is wakening to the need of adequate armament and value of aeronautics. The need for an adequate system of defence is the topic discussed in homes, clubs, stores, churches, restaurants, meetings—everywhere and by all kinds of people.

Party politics is no longer given attention. The thinking people do not care whether the next administration is to be democratic, republican—or anything else. They are primarily interested in getting protection for their lives and property. They do not care whether they and their children are to be governed for a time by a democratic or republican administration; they are too concerned in the vital question of escaping the danger which is threatening them.

Such professional politicians as Representatives John J. Fitzgerald, of New York; J. R. Mann, of Chicago; S. A. Witherspoon, of Mississippi, who were obsessed with their political power during the last sessions of Congress and disregarded the main needs of the nation are in retirement.

Fathers and mothers state frankly their fears of a war, of being torn from their families as millions have been torn in the present war; and as the truth of Congress's failure to provide means for adequate defence is revealed to them they are bewildered and angered by the situation. Movements to provide means of defence are readily supported.

The movement to develop an aeronautical reserve has been welcomed by the country at large, and although it is but a few weeks old, it already is country-wide in its scope, and has become of national importance.

An idea of how badly this movement is needed can be had from the letter sent to Secretary Garrison by Mr. Alan R. Hawley, the president of the Aero Club of America, printed herewith:

### A Government Squadron of Aeroplanes for New York City

A SQUADRON of eight aeroplanes, for the defence of the principal gateway of the Nation, to be stationed at Governor's Island, New York, is proposed in a letter sent to Secretary of War Garrison by Mr. Alan R. Hawley, President of the Aero Club of America. The letter follows:

The Honorable Lindley M. Garrison,  
Secretary of War,  
Washington, D. C.

My dear Mr. Secretary:

Whenever something happens in which aeroplanes take a leading part, as in the case of attacks on cities

and ships by aeroplanes and dirigibles, we receive many calls from people who wish to ascertain if we have any aerial defence for New York City, the principal gateway of our country.

The aerial attack upon Venice by Austrian aviators, who flew to Venice from a base more than 100 miles away, and the recent fight near Brussels, when 27 aeroplanes defended that city from the attacks of a Zeppelin, have increased the number of inquiries.

The attacks upon cities and ships by aeroplanes which start from distant bases and the use of aeroplanes for range finding, compel people to realize that aerial attacks could be made upon New York by aeroplanes starting from ships fifty to a hundred miles at sea, and large guns, delivering 2,190,000 foot tons of metal per minute at a range of 20,000 yards and aided by aeroplanes, would quickly reduce any coast defence not adequately protected.

Eight months of continuous aircraft achievements have, in fact, made people realize what every military and naval authority now recognizes, that "a navy without aerial eyes is as helpless as a submarine without a periscope; an army without aerial scouts can be corraled and slaughtered like a herd of sheep; a harbor or naval station without aerial defence is at the mercy of every puny submarine and cruiser, and a nation without aerial forces is as helpless as was the Lusitania at the time of her sinking."

To the inquiries regarding the extent of the aeronautical equipment available for coast defense, we have had to reply that the dozen Army aeroplanes now in service are at San Diego, California, and at Brownsville, Texas; that the few Navy aeroplanes are at Pensacola, Florida.

The East is entirely without aeronautical protection. The military centers have no aeroplanes; the troops have never manoeuvred with aeroplanes and the men behind the coast defense guns have no aerial eyes to give them their accurate range.

I submit that this is an unnatural and shocking condition, and as a citizen and taxpayer as well as the President of a representative organization, I deem it my duty to urge that steps be taken immediately to provide aeroplanes for the defense of this part of the country.

Being fully aware of the failure of Congress to appropriate the amount needed for adequate expansion of the aeronautical service, I refrain from urging the immediate establishing of aeronautical stations at every military center. But I respectfully urge that an aeroplane squadron be established at Governor's Island or some other suitable station near New York City.

I am actuated in urging immediate action because of the critical condition in which we are now living, as



I feel it works incalculable harm to allow such shocking conditions to continue.

Again assuring you of my deep appreciation of your endeavors to give our country an efficient system of defense, I remain

Very sincerely,

(Signed) ALAN R. HAWLEY.

*President, Aero Club of America*

### John Hays Hammond, Jr., Proposes Aeroplanes Equipped with Wireless for Coast Defense

JOHN HAYS HAMMOND, JR., the radio expert, has submitted to the Aero Club of America a detailed plan to provide, for coast defense, aeroplanes equipped with wireless, and a chain of radio stations, which will make it possible to provide protection to the Atlantic and Pacific Coasts and the Mexican border with thirty-three aeroplanes and the same number of radio stations.

Mr. Hammond is a member of the Club, and being deeply interested in providing adequate national defense, offered to co-operate in developing the Club's plans to provide aviation corps for the National Guard and Naval Militia of each of the states.

In his proposal to the Governors to extend the efficiency of aeroplanes for coast defense by the applications of radio systems to aeroplanes, Mr. Hammond says:

"With the Congressional apathy existing in matters of National defense, it is necessary that we apply directly to our citizens to stimulate action in this matter.

"As Chairman of the Sub-Committee of the Langley Aerodynamical Committee, I am much interested in the application of radio systems to aeroplanes. I believe that the combination of these two branches of science will prove invaluable as adjuncts in the protection of our country. With our extensive coast line, and our limited and low-speed navy, it is essential that our scouting facilities be extraordinarily efficient. With a well-organized scout system to cover our coast line, our fleet and land forces could co-operate with greater unity against the enemy in his landing operations. The intent of the enemy's manoeuvres and his ultimate objective could only be ascertained by aerial information, and with adequate information the limited force which the nation possesses could be used to its best advantage. I take the liberty of suggesting, therefore, a rough plan of action in the organization of a system for patrolling our coast, which would eliminate the possibility of a surprise attack upon any particular section of our coastal territory.

"I would draw your attention to an enclosed sketch which shows the Northeastern Division of our coast line. I have shown five areas of fifty-mile radius constituting the patrol areas for five aero scouts. In the center (approximately) of each area is situated a radio receiving station connected with land lines. Each aero scout is equipped with a radio transmitter of sixty miles daylight radius. Each scout is in constant communication with his central radio station, and each station is directly connected by 'phone or telegraph with the existing land system. The movements of ships, their disposition and the strategy of the enemy will be readily discovered with the information obtained from scouts covering such an extended front. An intelligent understanding of the enemy's purpose would be gained, and our forces could be concentrated at decisive points to meet the invader.

"From New York to Mt. Desert five areas would be located. From New York to the Mexican border seventeen areas would be established, and on the Pacific coast there would be eleven more. It would be necessary, therefore, for the complete organization to have 33 aero scouts to cover the entire coast line of the United States. In any war, however, it is likely that if a single nation were the enemy, that only one coast need be actively guarded, in which case the balance of the scouts form a valuable reserve.

"It is obvious that a number of existing radio stations could be used in this work, and also existing buildings for receiving stations.

"The Chaffee System for wireless telegraphy is, in my opinion, the most suitable type of installation, for the following reasons:

1. Simplicity of operation,
2. No knowledge of Morse Code needed,
3. Compactness,
4. Lightness,
5. Its ability to give large power in small aerials,
6. Rapidity of transmission of intelligence,
7. Sharpness of turning, and
8. Cheapness of construction.

"If this matter should prove of interest, when the Governors should decide that steps should be taken along this line, I should be glad to give the use of my laboratory at Gloucester for testing out the radio installation."

The Governors of the Aero Club consider Mr. Hammond's proposal of great importance. Under proper conditions, this may produce a valuable adjunct to our defense system. The proposal, therefore, will be submitted to the heads of the National Guard and Naval Militia of the states who are co-operating with the Club in developing aviation corps for the National Guard and Naval Militia.

### The Unprotected Wealth of the Nation—the Greatest Argument for Adequate National Defense

THE Census Bureau tells us that the per capita wealth for every person, man, woman and child, in the United States is \$1,965. The amount spent annually in the past five years in supporting the Army and Navy showed that we pay less than \$2.50 per capita to maintain the means to protect our wealth! The report, issued May 20th, reads:

The Census Bureau estimates the actual tangible wealth of the United States at \$187,739,000,000—an average of \$1,965 for each man, woman and child in the country.

This wealth consists of land, buildings, live stock, machinery, merchandise, shipping, rolling stock, gold and silver and other universal products and personal effects. The estimate applies to 1912, when the calculation was made.

In 1850, the national wealth was \$7,136,000,000, or \$308 a person; in 1900 it was \$82,305,000,000, or \$1,083 a person. Thus, in the last sixty-five years, the national wealth has increased 2.258 per cent., and the wealth per capita has grown 4.96 per cent. Each American's theoretical equity in his country's wealth is six times as great now as it was in 1850.

Over 15 per cent. of the national wealth, or about \$12,314,000,000 is real estate that is exempted from taxation. This includes public works and property used for religious and charitable purposes.

Of the present national wealth, \$98,363,000,000 is in taxed real property and improvements; \$16,149,000,000 represents railroads and their equipment; \$14,694,000,000 is in manufactured products; \$8,463,000,000 is in furniture, vehicles and the like; \$6,238,000,000 is in live stock, and \$6,091,000,000 in manufacturing machinery, tools and implements.

The richest State is New York, with \$25,011,000,000 of property wealth. Then comes Illinois with \$15,484,000,000 and Pennsylvania with \$15,458,000,000.

Britain's national wealth was estimated a year or so ago at \$108,280,000,000, and Germany's in 1908 at \$77,864,000,000.

These figures may make Congress realize the enormous responsibility it assumes in leaving the country in a continuous state of unpreparedness. They may realize the comparative insignificance of the \$7,500,000 asked for Army and Navy aeronautics.



# THE NEWS OF THE WEEK

## H. P. Whitney and Robert Glendinning Order Aeroplanes

H. P. Whitney, the prominent financier and sportsman, and Robert Glendinning, the Philadelphia banker and sportsman, have followed the example of Vincent Astor and ordered aeroplanes.

H. P. Whitney, like Vincent Astor, ordered the Burgess-Dunne type; Robert Glendinning was able to get the busy Curtiss factory to promise early delivery of a Curtiss flying boat.

These gentlemen are all members of the Aero Club of America—and bring the number of sportsmen who have ordered or own aeroplanes up to a round half dozen.

Mr. Whitney has been a patron of sports for the past 10 years. He has one of the largest racing stables in America, now under lease to L. S. Thompson, and last year had 52 entries for the Futurity of 1916. He paid \$38,000 for the noted racer Peter Pan. In international polo Mr. Whitney has long been an active figure, and many meets of the Meadowbrook Steeplechase Club have been held on the Whitney estate at Waterbury. He owns the steam yacht Warrior, and the sloop yacht Barbara, another of his possessions, won in New York Yacht Club events at Newport in 1913.

Mr. Lieland Scott of the Hall-Scott Motor Co. was in New York last week and reports that the output of the new six-cylinder Hall-Scott motor is sold out for 4 months.

Theodore McCauley arrived on the Adriatic last Sunday and went immediately to Buffalo.

The visitors to the Aero Club included Mrs. Witmer, mother of Charles C. Witmer, and Miss Seely, sister of Lyman J. Seely.

Lieutenant Busted, of the British Commission has been ill of pneumonia.

Mr. Curtiss has just returned to Buffalo from Toronto. He reports things are humming at the Canadian branches of the Curtiss Co. Tony Jannus, the well-known flying boat pilot, has joined the Curtiss Co. of Toronto in the capacity of instructor. His brother, Roger Jannus will be in charge of the Jannus Baltimore business.

John Hays Hammond, Jr., recently called upon the officials of the Aero Club of America and explained to them interesting new developments for application of wireless to sending and receiving messages on aeroplanes.

J. A. D. McCurdy, who is in charge of the Curtiss interests in Toronto, was in New York recently and reported a rushing business.

## Mary Pickford Enjoys Cross-Country Trip in Martin Military Tractor

"Go a mile high will you?" laughed Mary Pickford from the front seat of the splendid new Martin military tractor. The little moving picture star was at Griffith Park, Los Angeles, ready to take a flight with Glenn Martin.

Glenn Martin grinned and nodded as he stepped into his machine and gave the sign to his mechanic to start the engine.

The day was not ideal for flying. There were dark, heavy clouds in the sky and it was threatening rain. The air was cool and a light wind blew up from the ocean. In spite of this the biplane went up and up till a height of 3,000 feet was gained. The flight was in a loop around Glendale and Burbank and over Griffith Park.

The party remained in the air for twelve minutes. Then in a long, graceful swoop, which took the breath from the observers, a perfect landing was made. The wonderful machine rolled up to within a few feet of the crowd and the heroine, smiling radiantly, extended her hands in a gesture of complete enjoyment.

Miss Pickford was enthusiastic and expressed a desire to ascend again in the near future. "Any old time," said Glenn Martin.

## Trying to Organize Air Squad in Spokane

Arthur Arneson of Spokane, associated with Gustav Stromer of Tacoma in the building of hydroaeroplanes at Tacoma, is working to have an aviation corps of volunteers attached to the Washington National Guard, according to report.

Arneson and Stromer placed the matter before the last session of the state legislature and, although they were unsuccessful at that time, they are still working for the plan, and state that they have hopes of the establishment of the corps in the near future.



U. S. Army Training Machine at San Diego, Cal.





Lieut. P. N. L. Bellinger, whose hydroaeroplane altitude record of 10,000 feet, height reached in one hour, nineteen minutes, was homologated by the Aero Club of America

### Raymund V. Morris Engaged to be Married

NO more interesting bit of social news has the week provided than that concerning the engagement of Miss Grace Gibson, daughter of Mr. and Mrs. W. D.K. Gibson of San Francisco, to Raymund V. Morris who has been in charge of the Curtiss Aviation Camp in North Island, San Diego.

Miss Gibson is a niece of John D. Spreckels and cousin to Mrs. Alexander Hamilton, Mrs. Harry Holbrook, J. D. Spreckels, Jr., and Claus Spreckels, while Mr. Morris belongs to a fine old Connecticut family.

He first met Miss Gibson at Coronado, where she passes a large part of each year, and was at once attracted to the charming young woman, whose vivacity and love of outdoor life has made her a reigning favorite at this resort, where open-air activity is a chief and always available pastime.

Air navigation has been a common theme of interest for the couple and Miss Gibson has watched with pleasure many of the young aviator's daring flights, while she, herself, has from time to time experienced the delight of gliding through the air with the man whom she is to wed. The marriage will be an early summer event.

Speaking of aviation—it seems to have struck a very popular keynote with the numerous guests arriving from time to time at Hotel del Coronado. During the past month it has been the pleasure of Mr. Morris to take up fully one hundred prominent people in the Curtiss flying boat and his own monoplane flying boat. He is the right hand man of Glenn H. Curtiss and is considered one of the most brilliant and daring aviators in America. His monoplane flying boat, which was constructed by himself, is the only thing of its kind in the world and is very high-powered, it being able to maintain a speed of eighty-five miles an hour.—*Los Angeles Examiner.*

### Another Aeroplane Factory

Buffalo is to have a second aeroplane manufactory and, with the Curtiss Aeroplane company located here, appears destined to be the foremost 'plane constructing city in the country. The Automobile-Aviation Industries corporation, financed by Buffalo capital, was recently incorporated to manufacture automobiles and aeroplanes. Construction of its steel and concrete factory on property now held under option just beyond the northern city limits, will, the company says, be started early in June. A floor space of 30,000 feet is planned. An aviation field of several hundred acres will adjoin.

The officers of the Automobile-Aviation Industries Corporation are Ed. Philip Leitze, M. E., president, and Homer F. Sanford, secretary and treasurer. Temporary offices and experimental plant are located at No. 350 Franklin Street.

Here the construction of the first monoplane will be started June 1. Two machines have already been set up for experimental purposes by Carl A. Cairens, of Minneapolis, Minn., chief of the theoretical department of the new company.

### CICERO NOTES

Mr. Couch finished assembling his tractor biplane, and Monday made an excellent flight of about 60 minutes' duration. He took his machine up to an altitude of 3,000 to 4,000 ft. and made a cross-country flight to the Hawthorne Race Track and back without landing. Mr. Couch's machine rises at a remarkable steep angle and climbs to quite an altitude in a very short time.

Monday, Mr. Sestack, also, went up with the Aero Stabilizer Company's machine and flew with the stabilizer connected to the controls.

Mr. B. C. Harrington, the new pupil of the Pallissard school, went up with Mr. Kastory and took his first lessons in banking.

Mr. Kellar also went up.

There has been flying every day at Cicero lately. Saturday, Mr. Couch went up to an altitude of over 4,000 ft., and became lost as he looked down upon the numerous green patches, each of which might have been Cicero Field. However, he made a good guess and glided down in the right direction. The Pallissard Co. was busy with pupils' flights all afternoon.

Sunday proved a day of accidents. Mr. Couch cracked one of his Kirkham's cylinders and the Smith motor of the Pallissard school machine broke a crankshaft. This latter accident luckily came after a sixteen-mile flight over Chicago. Messrs. Pallissard and Kellar ascended to an altitude of about 3,000 ft. and flew from Cicero to Lake Michigan, around the 3-mile crib and back to the hangar again. Then upon taking the machine up for an instruction flight the crankshaft broke.

Mr. Laird took out the Selleck Nieuport and did creditable work with this machine.

### Actress Takes Up Flying

Having tired of automobiling and other sports of like nature, Ruth Shepley, of "It Pays to Advertise" company, has lately taken to aeroplaning and so far her success in that direction is just about as great as that on the stage.

During the last few days Miss Shepley has been going up with Heinrich at Garden City.

Following her trial flights it is said that Miss Shepley will buy an aeroplane and will make regular flights between New York and Garden City.



The Gallaudet 100 Gnome Military Tractor biplane on the field at the Garden City Aerodrome, L. I. Standing in the centre, in front of the motor, is P. C. Millman, the pilot, while seated is D. Gallaudet



### Goodyear News

Goodyear growth has outstripped the prophecies of the officials who believed, when the plant at Akron was doubled in 1913-14 that ample provision had been made to take care of necessary expansion for several years to come. And now The Goodyear Tire & Rubber Company announces the construction at once of a new brick building that will add 37,500 square feet of working space to a factory with an area already in excess of 35,600 acres.

The new building will house several processes connected with making Cord Tires, in which the company's business has grown by leaps and bounds the past year, and room will also be made for the growth of the Mechanical Goods Department, to facilitate the making of asbestos packing, balloon and aeroplane fabric, coated and waterproofed fabric, the mixing of all cements, etc.

### Aeroplane Flights on Spring Day

Ithaca will have other attractions besides the regular events and the various athletic events of Spring Day.

There will be flights both morning and afternoon of the aeroplanes and hydroaeroplanes of the Thomas Brothers Aeroplane Company. Aviator Busted, a lieutenant of the British Aerial Corps, spends considerable time in Ithaca testing machines before they are shipped. He is expected to test one of the machines.

Frank H. Burnside, chief aviator of the Thomas Company, plans to make several flights the day of the Harvard-Cornell boat races.

### Thomas Flights Interest Thousands

Aviators Frank Burnside and Charles Fay of the Thomas Aeroplane Company made several successful flights on the afternoon of May 22nd, while the baseball game and boat races were in progress at Ithaca. The big Thomas hydroaeroplane was used in the various trips over the city and lake.

During the varsity race Aviator Fay followed the oarsmen obtaining perhaps the best view of the Cayuga Lake regatta on record. At various times through the day the whir of the propeller and the noise of the engine could be heard above the din of the Spring Day doings and the cheering at the game and races.

### New Timson-Albree Machine to Be Tested

The second Timson-Albree aeroplane is now completed and ready for trial. The first one, built a year ago by Roscoe P. Timson and Norman Albree, the former of Lynn and the latter of Swampscott, Mass., was tried out at Marblehead with pontoons, but proved too heavy. This second machine, built by the same men, assisted by Guy Gardner, the Swampscott boat builder, is fitted with wheels and will be tried out over land.

### Sturtevant News

Mr. Benjamin Foss of the B. F. Sturtevant Co. of Boston, Mass., recently returned from an extended tour of the West including the Pacific Coast. He visited several of the leading aeroplane builders while there and reports that there is a decided air of activity, notably at the Christofferson Aviation Co., of San Francisco and at the Glenn Martin Co. of Los Angeles. Very little foreign business has been secured up to the present time but there are definite prospects of many orders soon being placed.

### Busy Making Frames for Burgess Machines

Contractor Thomas D. Snow, who is doing the mill work on the wooden frames used in the construction of the Burgess-Dunne machines at his shop at Marblehead, is being kept busy. The normal requirements are two machines per week and as each



From left to right, Mr. P. N. Noyes, Mr. K. B. McDonald, Mr. Glenn H. Curtiss and Mr. Taylor, expert consulting engineer

piece has to be accurately made according to the plan, work is booming. The specifications call for the frame pieces to be within one sixty-fourth inch of the dimensions given, which is about as fine as it is possible to get with wood. Everything used is designed especially for strength and lightness.

### Herbert Munter Takes His Mother On An Aerial Joy Ride

Herbert Munter recently took his mother, Mrs. John A. Munter, for an aerial joy ride of eight minutes over Harbor Island, Elliott Bay and the extreme downtown district of Seattle, Washington. But once before has this feat been performed—one year ago in California when Aviator Glenn Martin took his father and mother aloft in his flying boat over Pasadena.

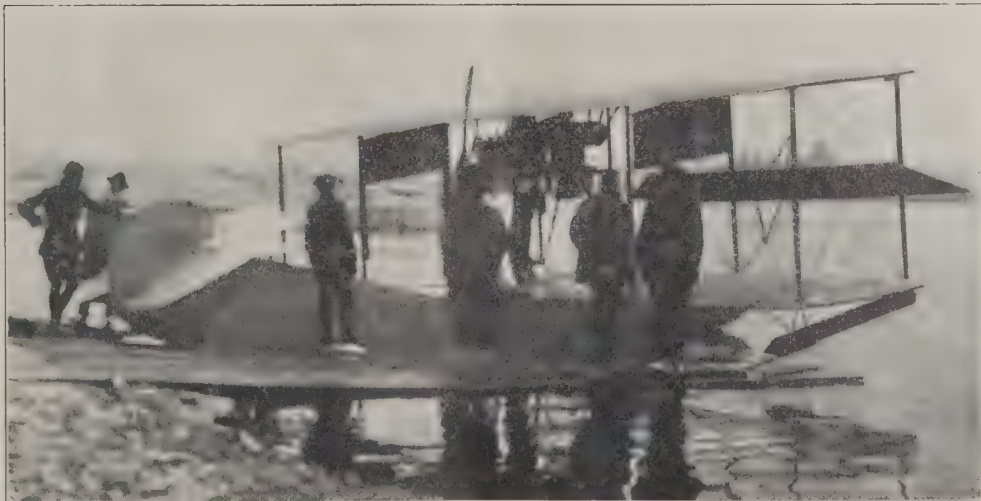
Before the flight Munter made one trip aloft to test his machine and be sure the engine was properly "tuned up." Then he descended, helped his mother in her seat, started his engine and went buzzing aloft, with Mrs. Munter waving both hands at her husband, daughter and two of her sons.

Upward and upward the machine climbed. At an altitude of 900 feet, the aviator made a great sweeping circle out over the bay and the manufacturing districts.

Returning, while yet a considerable distance above the ground he treated his maternal ancestor to a finely executed dive and spiral drop, straightening out and settling to the ground.

"Oh, I never want to walk on land again," said Mrs. Munter, in describing her experience. "I only wish Herbert would build me a machine so I could go flying with him."

One of the two Flying Boats used for training by the Curtiss Aeroplane & Motor Co. of Toronto, of which J. A. D. McCurdy is the head.





## 100 H. P. Aeromarine Engine

By N. MacCough

**T**HE Aeromarine Plane & Motor Co. of Nutley, N. J., is now marketing a six-cylinder vertical engine with a bore of 4 5/16 inches and a stroke of 5 1/8, rated as 100 B.H.P. at 2000 r.p.m. The propeller is driven through gearing, at 1/4 of the engine speed or 1142 r.p.m.

The cylinders are of cast vanadium iron, machined inside and outside, and provided with electrolytically deposited copper jackets. This is done by moulding wax over the cylinder after it has been machined, making it take the shape of the water space. By rubbing graphite over the wax the surface is made capable of carrying an electric current, and is then placed in an electro-plating bath, where it remains until enough copper has been deposited over the wax to make a substantial jacket wall. The wax is then melted out, leaving the water space clear. This construction gives the advantages of a cylinder wall machined on both sides, and eliminates the probabilities of water leakage experienced with jackets which are pressed on.

The most unusual feature of this engine is the use of an overhead concentric valve, *i.e.* the exhaust valve is in the center of the cylinder head, and contains the intake valve in its center. This makes it possible to get a very large valve area; an area considerably larger than it is possible to obtain with the usual overhead valves.

These valves are operated by a camshaft located in the crankcase, through a push-rod and rocker for each valve. The camshaft which is hollow, is of high-grade steel, heat treated and ground. It is provided with seven bearings of the split bronze bushing type, 7/8-in. diameter and 2 1/8-in. long. The bearing surfaces are babitted. All cams are hardened and ground.

The connecting rods, of I-beam section, are machined from solid hand forgings of Carpenter Special Nickel Steel, assuring uniformity of weight.

It also makes possible the use of rods of such light weight that the stresses due to inertia and centrifugal forces, are considerably reduced.

The crankshaft, of 2 9/16-in. throw, (5 1/8-in. stroke) is also machined from the solid forged billet, heat treated and ground true, the material being the same as used for the connecting rods. Main bearings are provided on both sides of each crank throw, 1 3/4-in. diameter and 1 5/8-in. long.

Each of the main bearing caps is provided with four retaining bolts arranged in transverse line to the shaft. The two innermost bolts of each cap pass entirely through the crankcase and are fitted with retaining nuts at the top of cylinder base. Tie-down rods extend from the crankcase up to light bridge pieces which rest on and across the top of the cylinders.

Ball bearings are fitted on both sides of the driving gear. At the other extremity of the crankshaft additional ball bearings are employed to carry the load of driving the camshaft, water and duplex oil pumps, and magnetos.

All bearings throughout the engine other than ball bearings are die cast Fahrig metal and interchangeable.

After a good deal of experimenting it has been found that these engines give the best results when equipped with two three-branch intake pipes and two Zenith carburetors with synchronized throttles.

Ignition is by two Bosch magnetos and two sets of spark plugs to each cylinder, one magneto being used for each set of plugs.

The oiling system has been designed to meet the most severe requirements of modern aeroplane engines. Lubrication is maintained irrespective of the angle at which the engine operates. Loop-the-loop and up-side-down flying are possible, as has been demonstrated by the fact that an aeroplane equipped with one of these engines recently made twenty-two consecutive loops in one flight.

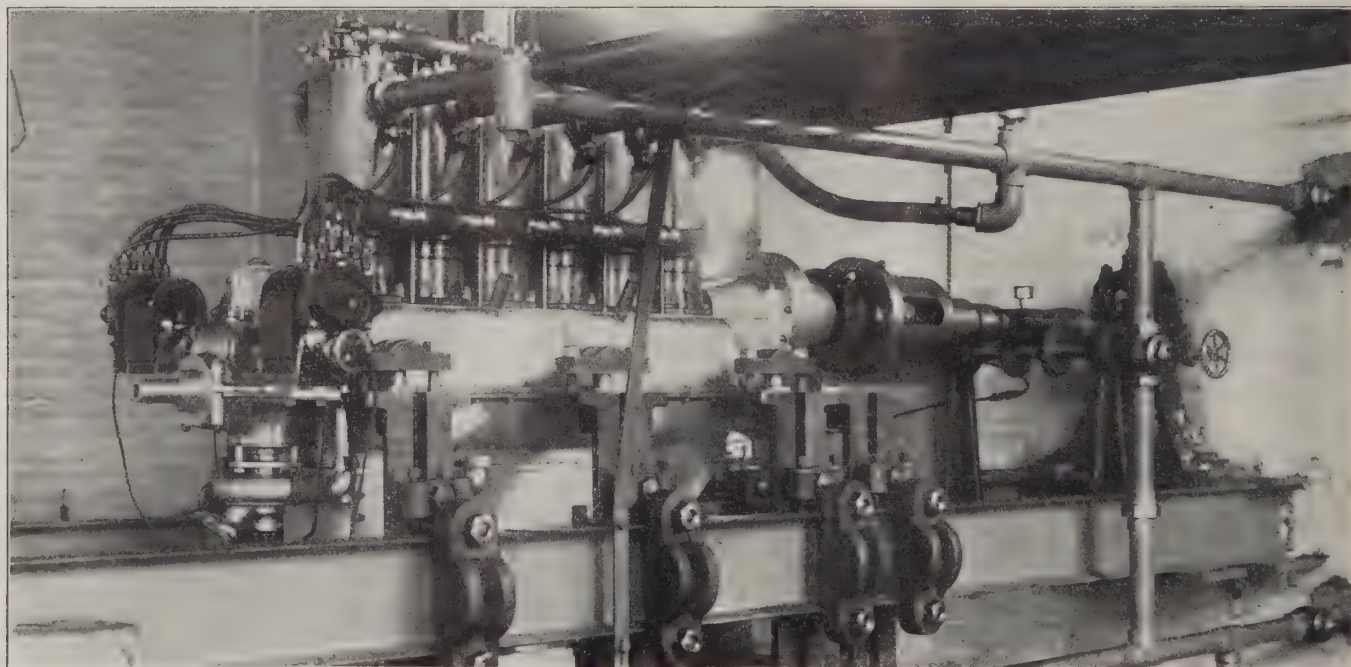
An oil reservoir is provided with a capacity of five gallons. When the engine is running, a gear-driven duplex pump (high- and low-pressure) takes oil from the reservoir and delivers it through ducts machined in the crankcase, to the crankshaft bearings; through these bearings and into the hollow crankshaft; thence, to the connecting rod bearings, and all driving gears mounted on the crankshaft.

The oil is also delivered to and through the hollow camshaft. The camshaft is crossed drilled opposite the connecting rods, so that a stream of cool oil pours on the rods while running, maintaining them at a low and even temperature. Oil is also directed from the camshaft to the camshaft bearings, cam followers and guides.

All surplus oil is thrown by the rapidly revolving parts to the sides and bottom of the under half of crankcase, and then drains down and through an integral hollow extension of the under half of crankcase. This extension leads down and through the oil in the reservoir to the low pressure gear of the duplex oil pump, from which it is returned to the reservoir and cooled.

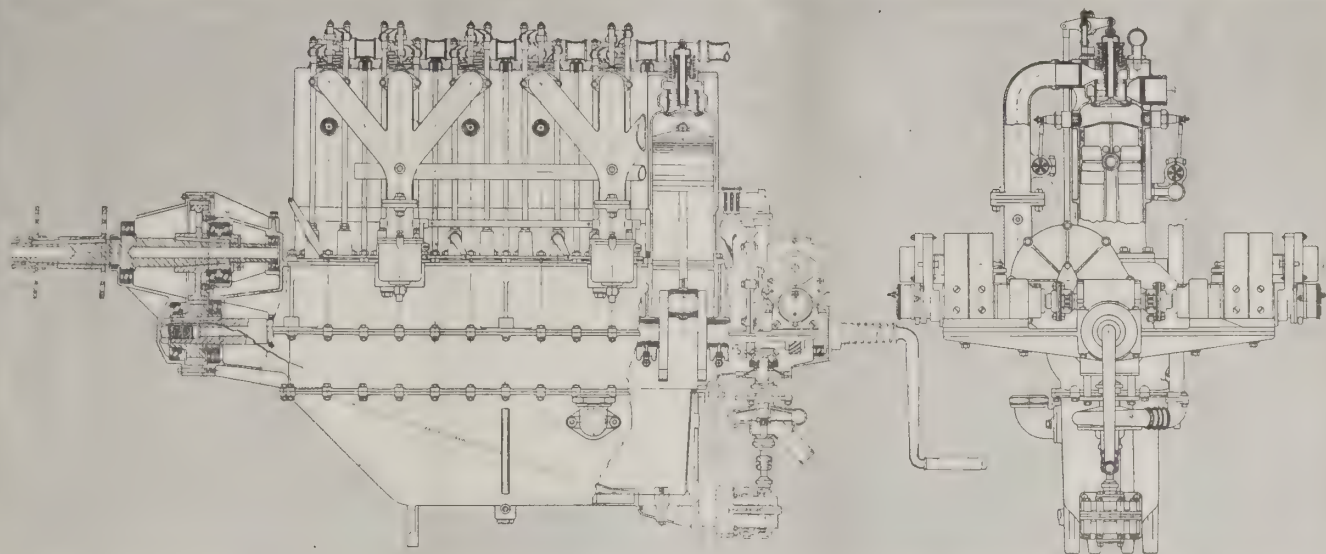
By means of this system the crankcase is constantly and thoroughly drained of all surplus oil and the danger of flooding the cylinders at any position of the engine is eliminated.

These engines are provided with positive means for driving the electric generator which would be required for lighting, starting or stabilizing; also for driving gasoline pump and revolution indicators. It has been expressly kept in view that the engines should in every detail conform to the requirements of the United States Government specifications.



A 100 H.P. Aeromarine engine on the testing stand. Power is absorbed by a propeller or fan-brake which is outside the building





Section Drawing of the 100 H.P. Aeromarine Engine

### The Garden City Aerodrome

In spite of the changeable weather which prevailed during the past week there was considerable activity at the aerodrome. Early in the week the new Mayo biplane arrived and was flown by Stevenson MacGordon who gave the field habitués a very impressive demonstration of its excellent flying qualities. On his very first flights he handled the machine with such ease and skill that one would think he had been used to handling it for months instead of only having made a few flights in it.

So impressed were the British officials with the trials of the new Mayo that they immediately asked Chance Vought, its designer, if he would permit of an official test of its speed. Although the machine had made but three flights previously and was fitted with a make-shift propeller he nevertheless agreed. Accordingly a course a mile long was laid off along the roadway outside the field and this Mac Gordon covered at the rate of over 78 miles an hour—and this with only a 90 h.p. motor—ample testimony to the wonderful efficiency of Chance Vought's latest design. The flight was officially witnessed by Captains Binyon and Elder of the R. F. C. who expressed great satisfaction at the performance as well as the robust construction of the machine. Later in the week Mac Gordon put the machine through all manner of manoeuvres, giving splendid exhibitions of steep banking and quick climbing which well emphasized the ease of control and quick climbing ability of this splendid machine.

Saturday was an ideal flying day. The air was heavy and not a breath of wind was stirring and consequently everyone who could be out was flying.

Stevenson Mac Gordon was out early in the afternoon for a test flight carrying Alfred A. Hofer, chief mechanic of the Mayo Company as passenger, giving him an exhibition of steeply banked turns and quick climbs which were well impressed on his mind. This was too much for Millman, so he brought out the 100 h.p. Gallaudet and proceeded to duplicate Mac Gordon's manoeuvres, just to show that the Gallaudet machine, in spite of its great degree of inherent stability could be made to perform quick manoeuvres when in the hands of a skillful pilot.

While this was going on John Guy Gilpatric, now chief pilot of the Heinrich Aeroplane Company, was busy making tests of the new 110 h.p. Gyro-motored Heinrich military tractor before the officers of the British Royal Flying Corps. In all he made over eleven flights including speed tests, quick climbing trials and weight carrying tests.

Early in the afternoon Mac Gordon took up Walter H. Phipps, associate Editor of *Aerial Age*, for a flight in the Mayo, ascending with him in quick order to a height of over 3,500 feet. Mac Gordon flew with him in wide circles over the field, banking terrifically on the turns and putting the machine through its paces for all it was worth. The descent was made in an extremely sharp glide from a height of over 3,000 feet from which the machine came out without the slightest effort, so sensitively and perfectly does it answer the controls.

Mr. Phipps proved extremely enthusiastic over his flight in the machine and expressed the opinion that both from a flying standpoint as well as the constructional and designing standpoint the new machine leaves little to be desired.

Following this flight, Harold Kantner brought out the Huntington tractor biplane and made two flights, on one of which he rose to a height of about 4,000 feet and descended in one of the most beautiful glides which has ever been seen at the field, his descent taking over 7 minutes.

Late in the afternoon Mac Gordon was out again in the Mayo, this time with Chance M. Vought, its designer as passenger. After 15 minutes of flying, during which he put the machine through its paces, he landed in a beautiful spiral glide.

On Sunday and Monday the same excellent flying was in order, and many passengers were carried and much good flying was accomplished by Millman, Kantner, Mac Gordon and Gilpatric.

### ST. LOUIS NOTES

By Henry Drake Harkins

Capt. John Berry, world-famous aeronaut and winner of the Aero Club's American championship trophy, has opened a flying school in St. Louis. It is operated in connection with the Captain's automobile school which has been in successful operation for many years, and thereby gains all the facilities of his large woodworking and machine shop.

The course does far more than turn out mere operators of controls. Students will first take the complete automobile course and familiarize themselves with motors, operation and repair work. Then they will pass into the aeroplane construction department where all the school machines are produced in their entirety. Simultaneously—they will attend a complete course of lectures on the theory of flight and construction.

When the ground work is completed the pupil will finish his course at the 200-acre flying-field near East St. Louis.

The school machine is of special design by Mr. C. C. Crailie and follows the best American and European practice but is of very sturdy construction to withstand the hard usage to which it is to be subjected. The dual controls are side by side enabling the pupil to observe every move of the instructor.

Only when the pupil becomes an expert flyer is he considered to have finished the course.

The number of inquiries from all over the United States at the announcement of the school greatly surprised Capt. Berry and construction is at present being rushed to provide adequate facilities for the pupils.

### Of Interest to Altitude Record Aspirants

An item which should be of interest to aviators and balloonists seeking altitude records is the fact that the oxygen-breathing apparatus for high altitude work, as used by Linnekogel and others in Germany, is available in this country. Anyone wishing to use this apparatus can make arrangements to do so by getting in touch with Mr. George B. Harrison, Chairman Balloon Committee, Pacific Aero Club, 27 Monroe St., San Francisco, Cal.



# Naval Militia of New York and

THE presentation of flying boats to the Naval Militia of New York and Illinois, and the proposal made by Mr. John Hays Hammond, Jr., to organize a system of aero-radio zones for the protection of the Atlantic and Pacific Coasts and the Mexican border, are the important developments that have followed the appeal to the nation for support to the movement to provide aeronautical equipment for national defense.

### Illinois Naval Militia Presented with Flying Boat

The state of Illinois holds the distinction of being the first state to actually obtain a flying boat for its Naval Militia. The flying boat has been presented by Messrs. A. M. Andrews and Stewart Mac Donald, two Chicago yachtsmen, and was christened on May 22d.

Miss Mona Dunne, daughter of Governor Dunne of Illinois christened the machine.

The ceremonies attending its launching were held at the government hangar at the foot of Washington street, Chicago, and were attended by Governor Dunne, Mayor Thompson and a number of naval reserves and Illinois National Guard officers.

The new craft was christened "Alice" in honor of Mrs. A. M. Andrews and Miss Alice Macdonald. Commodore Andrews and Stuart Macdonald, father of Miss Alice, presented the hydro-aeroplane to the Illinois Naval Reserves.

The Alice is the latest type of Curtiss flying boats, equipped with a 100 horsepower engine and capable of a speed of seventy miles an hour. It carries a new style Colt automatic aero gun.

Mayor Thompson congratulated the reserves and the donors and expressed the desire to be among the first to be carried on the "Alice."

The state has made no provision for paying the salary of an aviator and the operating expense for the flying boat. To meet this expense the Alice will be used for passenger purposes during the summer.

Among those present at the christening yesterday were Lieutenant Commodore Horatius L. Wait of the Illinois Naval Reserves, Captain William A. Moffett, Lieutenant A. M. Steckle of the United States hydrographic office, Adjutant General Frank Dickson, I. N. G.; Colonel Joseph B. Sanborn, Colonel John J. Moriarity, Colonel Daniel Garrity, Colonel M. J. Foreman, Lieutenant Cecil Page, Captain Warren L. Purdy, Commodore Robert L. Doran and Commodore William A. Lydon.

### Curtiss Co. Offers Flying Boat to Start Aviation Corps for Naval Militia of New York State

The latest and, to date, the most substantial contribution to the Aero Club of America's National Aeroplane Fund is a \$7,500 Curtiss Flying Boat, of the same type as used in the United States Navy, and a thorough course of training for both a pilot and a mechanic.

This donation comes from the Curtiss Aeroplane Company, of Buffalo, New York. Mr. Glenn H. Curtiss, the President of the Company, in a letter commending the movement to develop aviation corps for the National Guard and Naval Militia of every state in the Union, says:

"We are heartily in favor of this movement, and will do whatever we can to assist in its development. We shall be glad to present to the Naval Militia of New York State, through the Aero Club of America, a flying boat, and will train an aviator and a mechanic."

The offer of this aeroplane is especially valuable, as there are no military aeroplanes in commission in the East. The dozen Army Aeroplanes now in service are at San Diego, California and Brownsville, Texas; and the few Navy aeroplanes are at Pensacola, Florida, therefore the East is entirely without protection. The military centers have no aeroplanes; the troops have never manoeuvred with aeroplanes, and the men behind the coast defense guns have no aerial eyes to give them an accurate range.

Commodore R. P. Forshaw, Commanding Officer of the Naval Militia of New York State, with Headquarters on the U. S. S. GRANITE STATE, has been advised by the Aero Club of America of the offer. Commodore Forshaw will decide which of the three Battalions of the New York Naval Militia the flying boat will be assigned.

The New York Naval Militia has five vessels at its disposal, as follows:

U. S. S. GRANITE STATE, foot 97th Street, North River, New York; Headquarters Naval Militia and First Battalion.

U. S. S. WASP, foot West 97th Street, North River, New York, First Battalion.

U. S. S. GLOUCESTER, foot 52nd Street, Brooklyn, New York; Second Battalion.

U. S. S. SANDOVAL, Charlotte Harbor, Rochester, New York; Third Battalion, First and Second Divisions.

The French Public Subscription brought \$1,200 to the National Aeroplane Subscription, started substantially. The following contributions have been made to the Aero Club of America.

A Flying Boat and a course of training for both a pilot and a mechanic, for the Naval Militia of New York State, offered by the Curtiss Aeroplane Company.

A woman interested in the Movement.....	\$1000.00
Edwin Gould.....	500.00
Cortlandt F. Bishop.....	500.00
Mortimer L. Schiff.....	250.00
Alan R. Hawley.....	250.00
J. G. McCoy.....	250.00
Glenn H. Curtiss.....	250.00
Editors and Pubs. Flying.....	250.00
Editors and Pubs. Aerial Age.....	250.00
J. Parke Channing.....	250.00
Allan A. Ryan.....	250.00
Frederick M. Bourne (N. Y. Sun).....	200.00
Samuel H. Valentine.....	100.00
S. R. Guggenheim.....	100.00
Robert Glendinning.....	100.00
Frank A. Seiberling.....	100.00
George W. Turney.....	100.00
Lawrence B. Sperry.....	100.00
Chas. Jerome Edwards.....	100.00
A. B. Lambert.....	100.00
E. Meyer, Jr., (N. Y. Times).....	100.00
J. S. Blackton, (N. Y. Sun).....	100.00
Miss H. Ware, (N. Y. Tribune).....	100.00
Harrington Emerson.....	100.00
Alvin Untermeyer.....	50.00
F. Harrison Higgins.....	50.00
Howard Huntington.....	25.00
Walter H. Phipps.....	25.00
F. A. R.....	25.00
Isaac M. Ulman.....	25.00
James Byrne.....	25.00
John Dale Cooper.....	25.00
Edgar M. Berliner.....	25.00
Capt. Thos. S. Baldwin.....	25.00
F. H. Russell.....	25.00
Albert S. Heinrich.....	25.00
K. M. Turner.....	25.00
Bernard A. Law.....	25.00
Charles F. Niles.....	25.00
William H. Bliss.....	25.00
Maximilian Schmitt.....	25.00

U. S. S. HAWK, Buffalo, New York; Third Division, Third Battalion.

At present there are no aeroplanes in the Naval Militia of any State. Last February the Navy Department requested the Commanders of the Naval Militia of the States having such organizations to create aviation corps.

The Commanders appealed for volunteers, and in some cases were successful in securing the services of sportsmen with aeronautical experience. Commander Charles L. Poor, Commander, First Battalion, New York Naval Militia, appealed to the Aero Club of America and secured the services of two members, Messrs. William Fitzhugh Whitehouse and Harold H. Brown, both of whom are trained aviation pilots.

But the Navy Department could not supply the aeroplanes, and as there were no prospects of obtaining aeroplanes for either the National Guard or Naval Militia, the Aero Club of America and its affiliated Aero Clubs started a Public Subscription, similar



# Illinois Presented with Aeroplanes

1909; the German Subscription brought \$1,808,626. The Aero Club of America, is developing very subscriptions received through New York newspapers and direct

John G. Breckenridge.....	\$25.00
William F. Whitehouse.....	25.00
Capt. H. L. Willoughby.....	25.00
Robert Pluym.....	25.00
Caleb S. Bragg.....	25.00
William H. Williams.....	25.00
Joseph A. Steinmetz.....	25.00
Miss H. C. Worth.....	25.00
William E. Scripps.....	25.00
Burt M. McConnell.....	25.00
Miss K. Huntington.....	25.00
John E. Sloane.....	25.00
William Berri.....	15.00
Harold H. Brown.....	10.00
Lt. J. E. Carberry, U. S. A.....	10.00
Lt. F. Dortch, U. S. N.....	10.00
Lt. F. P. Lahm, U. S. A.....	10.00
Howard A. Scholle.....	10.00
A. W. Evarts.....	10.00
J. Wesley Bovee.....	10.00
A. Leo Stevens.....	10.00
Arthur Veel Rose.....	10.00
Waldron Williams.....	10.00
Lt. H. A. Dargue, U. S. A.....	10.00
R. V. Morris.....	10.00
Gen. R. K. Evans, U. S. A.....	10.00
A. G. Batchelder.....	10.00
Reginald Sinclair.....	10.00
Frank S. Lahm.....	10.00
W. W. Strong, (N. Y. Sun).....	10.00
Chas. H. Dorr, (N. Y. Sun).....	10.00
Dr. H. Welland, (N. Y. Tribune).....	10.00
Lt. J. H. Towers, U. S. N.....	10.00
William S. McNutt.....	10.00
M. C. D., (N. Y. Times).....	5.00
F. V. Schley, (N. Y. Sun).....	5.00
J. J. Wardrop, (N. Y. Sun).....	5.00
H. P. Marshall, (N. Y. Sun).....	5.00
E. A. Davenel, (N. Y. Tribune).....	5.00
H. Hone, (N. Y. Tribune).....	5.00
H. Aulich, (N. Y. Tribune).....	5.00
K. Cosgrave, (N. Y. Tribune).....	2.00
M. D., (N. Y. Sun).....	2.00
E. Kingsell, (N. Y. Times).....	1.00

to the French and German Subscriptions of 1912-13, to raise a fund with which to develop aviation corps for the National Guard and Naval Militia of all the States, and bring about the utilization of 100 aeroplanes for mail-carrying, forming an aeronautical reserve which, while being used daily for peaceful purposes, shall be ready for military service in case of need.

To carry out these plans, the Aero Club of America has enlisted the co-operation of the Army; the Navy; Post Office Department; Smithsonian Institution; Coast and Geodetic Survey; Coast Guard; Weather Bureau; the Governors of the 48 States; the Mayors and Chambers of Commerce of 1,300 cities throughout the United States; the heads of the National Guard and Naval Militia; 600 Automobile Clubs and organizations, including the Automobile Club of America; the American Automobile Association and the Lincoln Highway Association; 600 Yacht Clubs, and of course, the affiliated Aero Clubs of the United States.

## John Hays Hammond, Jr.'s. Aero-Radio System for Coast Defense

In submitting his project to the Governors of the Aero Club of America, Mr. Hammond says:

In order to give us the facility so to use our force, I suggest a rough plan for the organization of a system the business of which shall be the patrolling of our coasts to obviate a surprise attack at any point thereon.

To make my proposal more clear, I have prepared the three accompanying maps to show the scouting areas to be patrolled by aeroplanes along our coasts.

On the one showing the northeastern division of our coast line there are five areas, each of fifty miles radius, which constitute the patrol areas for five aero scouts. In each of these areas I have indicated a radio receiving station which is connected by land lines with the other stations.

Each of the aero scouts will be equipped with a radio transmitter of sixty-mile daylight radius. He will not have a receiving apparatus, as the noise of his motor and propeller would be too great to permit him to hear. While aloft each of the scouts would be in constant communication with his central radio station, which in turn is connected with the existing land system by telephone or telegraph.

Scouts covering such an extended front would be able to discover and report upon the movement of an enemy's ships, their number and disposition and their strategic formation. Then, equipped with such valuable information, it would be comparatively easy to concentrate our forces at decisive points to meet the invader.

The maps I have prepared show that forty-four aero scouts could cover the coasts of our country. Now, as expense is a matter to which attention is always directed, let us look at the figures these forty-four would represent; in other words, the amount which would be required to furnish them as an arm of defense.

### Expense to Nation Estimated at \$398,500

Aeroplanes cost approximately \$7,500 apiece, so that the cost of them would be \$330,000. Radio transmitters and receivers at \$200 apiece would mean a total of \$8,800. The receiving stations and aeroplane sheds, costing \$600 each, would total \$26,400. The receiving aerials and masts, at \$250, make a sum of \$11,000, and then there is a final sum of \$22,300. This makes a grand total of expenditure of \$398,500.

This would, I think, be a generous sum, as it is obvious that a number of existing radio and receiving stations could be used. It is my opinion that the Chaffee system of wireless telephony would be the best one to use, as it is simple of operation, compact, light and requires no knowledge of the Morse code. It gives large power in small aerials, is capable of being sharply tuned and is cheap in construction.

The great problem in war is to engage the enemy at decisive points with overwhelming forces, to concentrate all energy available to deliver the knock-out blow on the enemy's vital spot. To ascertain the enemy's plans in order to meet his attacks with superior power at the right place, to concentrate our forces and to control their disposition, we must depend upon the eyes and the nerves of the military organization. The wonderful eyes-to-day of the army and navy are the aeroplane and dirigible. The nerves transmitting the intelligence from the eyes are the wireless, line telegraph and other signalling systems. The brain is the general staff controlling the operations of the armed forces.

### Shows How Modern Warfare is Conducted

In view of the fact that we have an immense coast line and an inadequately small navy, it is necessary that we shall have a patrol system of our coastal line to assist in the most efficient placing of our limited forces to meet the enemy. In these days where battle lines are hundreds of miles long it is impossible to judge the big plan of the enemy's movements from watching one army corps or a flotilla of his ships. It is the combined reports of many scouts scattered over a broad front that reveal the big plan of action.

In the patrol of our entire coast line by aeroplanes Washington will be connected by electrical nerves to a number of small wireless receiving stations placed along our coast. Each wireless station will be in radio touch with an aeroplane eye patrolling within a certain specific zone. Like the police system each aerial patrol will have its beat, and when there is trouble he will, so to speak, ring in by wireless.

Each zone would have a diameter of 100 miles, and as the wireless receiving station would be centrally placed, the radio set on the plane need only transmit about sixty miles (daylight conditions) in order to keep the patrol in touch with the receiver.

To cover our coast line, it would be necessary to have 44 aeroplanes and 40 small portable houses, each with an aerial mast about 80 to 90 feet high. The house would be used as a receiving station and an aeroplane hangar. The wireless receiving equipment would be portable and the whole system would be operating only in war conditions. The maintenance of the system in time of peace would be practically nothing, and placing it in operating shape would require no appreciable time. To man the system properly it would require three shifts of aviators, or 132 men, and 40 telegraphers. By introducing the wireless telephone and land phone experts in this line could be done away with.

### Defense Plan Would Divide Coast Into Zones

If the National Guard and Naval Militia of the coastal States undertook this plan the burden of their contribution toward it would be in direct proportion to their coast line, and therefore to their openness to attack. Each zone comprises one aeroplane and wireless transmitter, one building, one aerial mast and four men.

Maine would have three zones; Massachusetts, one zone; Rhode Island, one zone; Long Island, one zone; New Jersey, one zone; Virginia, two zones; North Carolina, two zones; South Carolina, three zones; Georgia, one zone; Florida, nine zones; Alabama, one zone; Mississippi, one zone; Louisiana, three zones; Texas, three zones; California, eight zones; Oregon, two zones; Washington, two zones.

This would give a complete coastal chain for the United States, but there would be a number of coastal stretches whose natural inadequacy for landing operations would make their patrolling unnecessary.

### Only One Aeroplane Now Available in Navy

In case of successful landing of the enemy this service would combine with the regular army or navy scouts, proving a valuable addition to the one aeroplane available to-day in the service of our navy.

With a system such as I have roughly outlined it would be possible in time of war for Washington to know every hour and a half the exact conditions along our entire coast line.

While the general proposition has only been touched upon, the details of the organization of such a system will be gone into by the governors of the Aero Club of America.



## The 90 H.P. Johnson Motored Shaw Monoplane

By Walter H. Phipps

THE Shaw monoplane which forms the subject of our description this week follows closely the design of the famous French Morane-Saulnier monoplanes and is particularly interesting on account of being one of the very few machines of this type fitted with a water-cooled motor. As may be seen the fuselage follows standard Morane-Saulnier practice but has the nose slightly lengthened to take the 90 h.p. 6-cyl. V-type Johnson two-cycle motor which, owing to its exceptional compactness, permits of a much smaller nose than would be expected, so that all told the Shaw monoplane is almost as compact as the Morane. The span is only 30 ft. and the length 22 ft. 6 in. The supporting area is 160 sq. ft. and the weight of the machine empty, about 750 pounds as against 680 lbs. for the 80 Gnome Morane type, which is not such a great difference considering the extra h.p. of the motor.

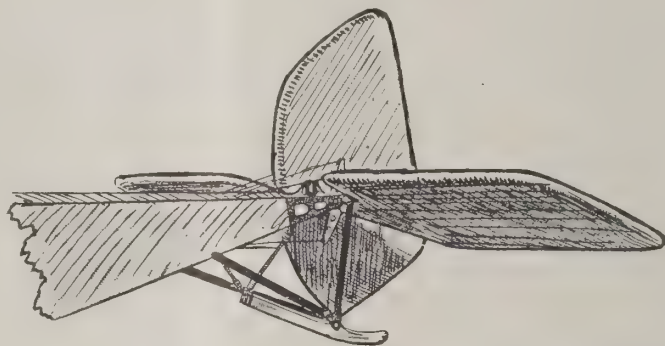
Aside from the distinctive Morane type fuselage with balanced Morane elevators the most striking feature of the machine is the landing chassis, which is original and differs from the regular Morane type. The chassis is a very simple type, consisting of two V's. of streamline ash, the two rear members of the V's extending forward to form short skids as shown in the accompanying drawings. The axle rests in the angle between the struts and is sprung by means of rubber cord, which is protected by a loose fitting leather cover which acts as a safety check in case the rubber should break, as well as protecting the rubber from the elements. The wheels which were especially made, seem rather too light, but I understand these are being replaced with stronger ones to stand the extra strain of the water-cooled motor.

The lower front guy wires do not attach direct to the front members of the landing chassis but run to a separate V pylon in front while the rear warping wires run to another V pylon directly in the rear of it, so that all load wires are carried independent of the landing chassis, a commendable arrangement as it precludes any chance of the bracing system collapsing from any strain weakening the chassis. The upper pylon arrangement is as neat in its conception and execution as the under carriage, and consists of a simple V-pylon of oval steel tubing, hinged at its feet and stayed by two wire cables against the pull of the warp wires which pass over a pulley mounted at the top of the pylon. It is, in fact, a simple strut in a system of wire bracing, and when the wires are removed by dismantling the wings the pylon may be readily removed or folded out of the way.

The cockpit is roomy, in spite of the water-cooled motor taking up so much room in the nose, and has ample accommodations for the pilot. The control is of the regulation Depurdussin type consisting of a single central control column with the warping wheel mounted at its head. The rudder is controlled by a foot bar. The rudder and elevator wires are entirely enclosed in the

fuselage except for a very short length near the extremity of the fuselage where they are attached to their respective organs. As on the Morane, a peculiarity of the tail is the absence of a fixed horizontal surface, the movable elevator being the only horizontal member. This elevator belongs to what is known as the balanced type, that is to say, its axis of rotation is situated approximately along the centre of pressure, so that there is never a great couple reacting upon the pilot's hand. The rudder is balanced in the same way.

The rudder and elevators are made of steel tubing and are carried in special maluable aluminum castings. The tail is carried on a small metal shod skid which is provided with a rubber shock absorber. Every piece of metal is nickel plated or polished.



*Tail Arrangement of the Shaw Monoplane, Showing the Balanced Rudder and Elevators*

The machine is driven by a six-cylinder V-type 90 h.p. Johnson 2-cycle motor driving an 8 ft. diameter Shaw propeller. The nose of the machine is surfaced with aluminum around the motor but aft of this it is covered with fabric treated with Emaillite. The structure is of the usual girder type built up of ash and spruce in such a manner that the longitudinals are not pierced by bolt holes.

The planes, like those used on the Morane-Saulnier monoplane have no dihedral angle.

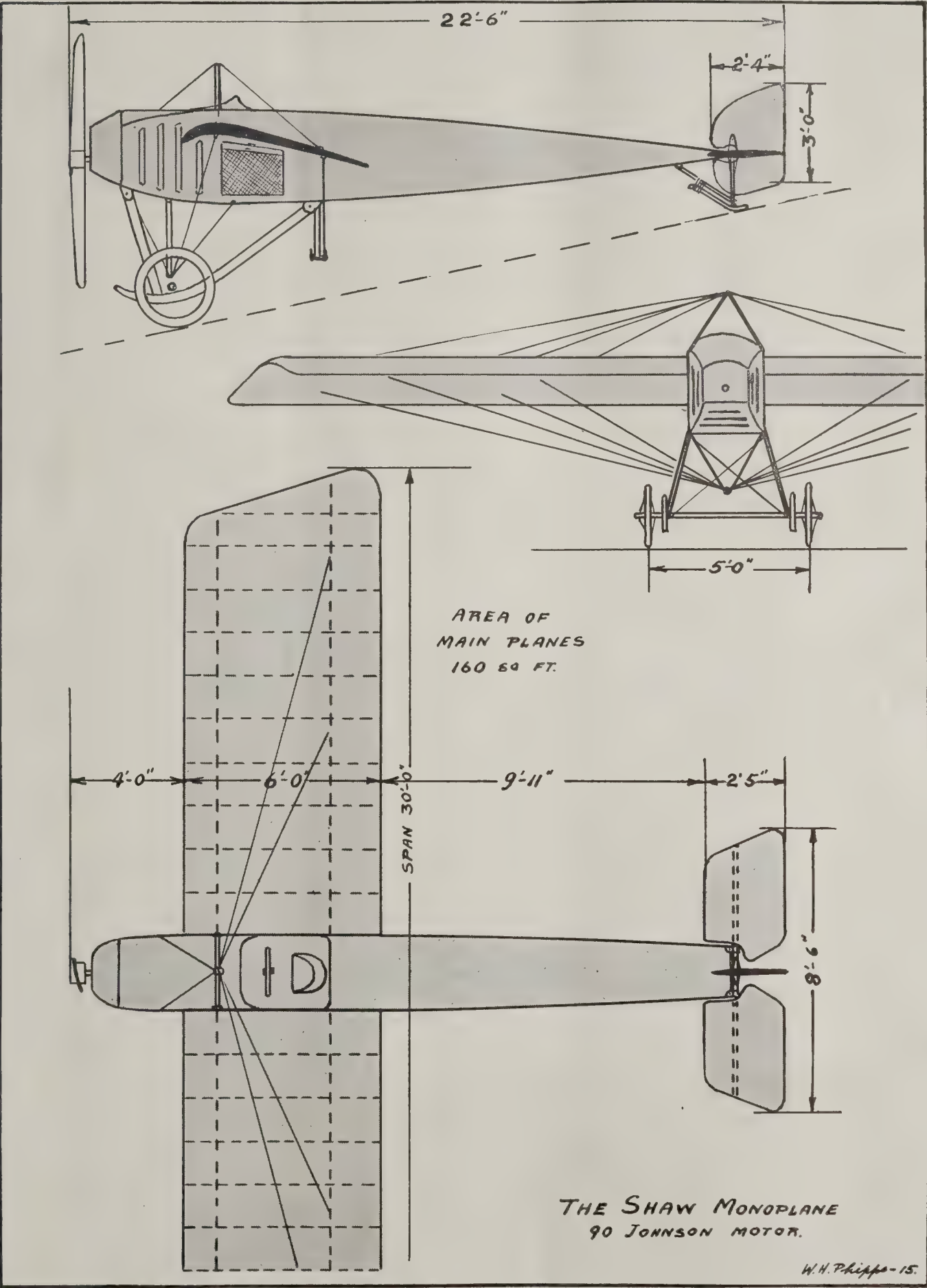
The main spars are of ash, channeled out between the guy fastenings for lightness, and are braced internally to resist drift pressures.

The machine was recently tested out at the Garden City aerodrome by Tex Millman, one of our newest pilots who has already proved himself to be one of the greatest pilots this country has ever produced. It flew quite steadily and fast but unfortunately was somewhat damaged in landing owing to a wheel buckling through the faulty manner in which the spokes had been fastened to the rim. Neither the machine nor motor were much damaged nor was its pilot injured in the least.



*The Shaw Monoplane Equipped with a 90 H. P. 2-Cycle Johnson Water-cooled Motor which was Tested at the Garden City Aerodrome by Tex Millman*

Scale Drawings of the 90 H. P. Johnson Motored Shaw Monoplane







# Foreign News

Edited by L. d'Orcy



## Belgium

According to a dispatch to the London *Daily Mail* the Allies have not been long in attacking the new German railway centre at Ghent. A raid by their aeroplanes has caused extensive damage there.

The chief objectives were the St. Pierre railway station and the railway bridge over the Scheldt. This bridge, which was built only a few years ago, carries practically all the traffic from Bruges and Ostend, and over it run the Berlin and Vienna expresses. Well-aimed bombs exploded on the main arches and blew a great hole in the bridge. The railway station buildings were wrecked and the tracks damaged, as well as a quantity of stores.

## France

German aviators flew over Paris at dusk on May 22 in an aeroplane which was disguised as a French machine. Because of the disguise the French air scouts allowed it to pass the frontier, believing that it was one of their own aeroplanes.

Flying high over the city, the German aviators dropped eight bombs. One of the bombs fell in the Seine close to the Eiffel Tower, another on outbuildings of the Bon Marché store, and another in the Rue St. Charles. The German aeroplane was driven off by a French machine.

Two persons walking along the Quai d'Orsay were slightly injured by one of the bombs.

Soon afterward the arrival of a Zeppelin was announced and an order was given for the lights of Paris and suburbs to be extinguished. A French aerial squadron immediately started in pursuit of the enemy's craft, which took to flight in an unknown direction. Half an hour later lights began to appear in the city.

On May 24, early in the morning, another German aeroplane flew over the northern outskirts of Paris and dropped several bombs, which, however, did not injure anyone.

## Great Britain

A naval lieutenant and a mechanic, the crew of a German seaplane that was floating disabled in the North Sea were rescued and taken prisoners on May 23, when a British destroyer passed near by.

One or more German airships raided Southend on May 26 killing two women and causing some material damage before they were driven off by British aeroplanes. The Admiralty announcement of the following day says:

"Late last night a Zeppelin visited the east coast and bombs were dropped on Southend. The casualties reported to date are two women killed and one child badly injured. Very little material damage was done.

"Aeroplanes and seaplanes proceeded in pursuit of the enemy, but the Zeppelin succeeded in escaping in an easterly direction."

While the Admiralty says that two women were killed, despatches from Southend speak only of one being killed, a Miss May Fabin, who was struck by a piece of flying shell while leaving a street car. On the other hand, Southend despatches say that two and possibly three Zeppelins participated in the attack, the Admiralty recording the presence of only one.

The sky was slightly clouded, though the moon was shining, when the whirr of the propellers was heard at about 11 o'clock. Immediately afterward bombs began to fall, exploding with terrific noise and throwing forth so much flame that the city was illuminated. Some of the missiles were incendiary. The residents were not in the least panic-stricken, on the contrary crowding into the streets and gazing upward to catch a glimpse of the raiders.

British aeroplanes went up in pursuit. Some time later two Zeppelins were seen over Burn-on-Crouch, seven miles northeast of Southend, but no more bombs were dropped.

News of the raid has created very little commotion in London, which is only forty miles west of Southend.

## Italy

Italy's long-expected participation in the Great War on the side of the Allies has now become a reality.

As could only be expected in modern warfare, hostilities opened with aerial operations. On May 25 Austrian aeroplanes attacked various Italian places of military importance raiding Venice, Porto Corsini, Tremiti Islands, Gessi and Barletta, which comes to say that they have virtually swept the whole of Italy's eastern coast. From Venice at the head of the Adriatic they have made their way as far south as Barletta, a distance of 350 miles, dropping a great number of incendiary and explosive bombs during their progress.

Porto-Corsini is the seaport of Ravenna and about 68 miles south of Venice; Barletta is 125 miles north of the Strait of Otranto, the southern entrance to the Adriatic, which is blockaded by the French Mediterranean fleet.

The Austrian aeroplanes probably started from Gorizia where an aviation center is known to be located; this place is only twenty miles from the frontier. Another near-by Austrian aviation center is at Santa Catarina Island in the harbor of Pola, some 90 miles from Venice where several seaplane squadrons are stationed.

An eye-witness describes the attack of the Italian cities by the Austrian aeroplane squadron as follows:

"The aerial attack on Venice was supported by a gunboat and some destroyers which kept out of range of the Italian guns. The aeroplanes dropped several bombs on the Venetian littoral and attempted to destroy the arsenal, but failed to find their objective.

"As soon as there was sufficient light to see the hostile aircraft the Italian anti-aircraft guns were turned upon them and Italians also ascended in several aeroplanes and dirigibles. The latter rose high and then swooped down on the enemy aeroplanes.

"The Austrians did not wait for an engagement at close quarters, but fled and were chased over the lagoons and out over the Adriatic by the Italian aerial squadron.

"It was an exciting and stern chase. The guns of the Italian aircraft opened fire on the foe, which dodged and ducked like a covey of wild birds. One Austrian aeroplane is reported to have been winged, but continued its flight.

"An attempt made by Austrian aeroplanes to destroy the airship shed at Gessi, just inland from Ancona, ended in failure. The assailants left quickly after dropping a few bombs and the Italian airmen, who started in pursuit, were unable to catch them."

The military authorities have given orders that no lights be displayed in Venice between sunset and sunrise that can be seen from above the city. This is a measure of protection against attack by aeroplane.

A great number of flying boats, aeroplanes and airships have been gathered at Venice to take part in the defence of the city from air raids and naval attacks. It has been learned that a Parseval airship arrived on May 26 at Trent by rail from Bavaria and the garrison of the place expects a Zeppelin shortly.

Italian gunners brought down an Austrian aeroplane in the first contest of the Italian campaign between flying machines and anti-aircraft guns on May 25. An aeroplane, rising from behind the Austrian lines on the Friuli front at 9:30 o'clock in the morning, darted over the rocky ground in front of the Italian positions.

A field battery opened fire as it came within range. This first shot missed. The second struck fairly, causing flames to burst from the motor. The aeroplane plunged downward and was splintered on the rocks beneath.

During the night of April the 26th-27th a squadron of Italian seaplanes raided the enemy's territory, throwing bombs on the Trieste-Nabresina Railroad, causing damage, and, it is believed, interrupting the line. In spite of the violent musket and artillery fire of the enemy the squadron returned safely.



Part of a Curtiss seaplane squadron attached to the Russian Black Sea Fleet whose vigilance saved Sebastopol from Turkish raiding cruisers





# MODEL NEWS

Edited by WALTER H. PHIPPS



## CLUBS

**THE AERO SCIENCE CLUB OF AMERICA**  
29 West 39th Street, New York City

**PACIFIC NORTHWEST MODEL  
AERO CLUB**  
915 Ravenna Boulevard, Seattle, Wash.

**LONG ISLAND MODEL AERO CLUB**  
401 Grant Ave., Cypress Hills, L. I.

**BAY RIDGE MODEL CLUB**  
6730 Ridge Boulevard, Bay Ridge, Brooklyn

**CONCORD MODEL AERO CLUB**  
Concord, Mass.

**SUMMIT MODEL AERO CLUB**  
26 Shady Side Avenue, Summit, N. J.

**THE ILLINOIS MODEL AERO CLUB**  
Room 130, Auditorium Hotel, Chicago, Ill.

**TEXAS MODEL AERO CLUB**  
517 Navarro St., San Antonio, Texas

**MILWAUKEE MODEL AERO CLUB**  
402 Bradford Ave., Milwaukee, Wisc.

**CONCORD MODEL CLUB**  
c/o Edward P. Warner, Concord, Mass.

**AERO CLUB OF ST. LOUIS**  
Columbia Bldg., 8th & Locust Sts.,  
St. Louis, Mo.

**MODEL AERO CLUB OF OXFORD**  
Oxford, Pa.

### Power Driven Model Aeroplanes

By Mr. Rudolph Funk

It is generally agreed that the construction of model aeroplanes in the form of the usual elastic-driven flying sticks, has reached such a pitch that there is little left to be gained by further pursuit in this direction, and more and more interest is being taken in the development of power-driven models. This form of model is quite in its infancy, and the names of those who have as yet been successful in gaining a flight from an engine-driven machine can easily be counted on the fingers. It is very questionable what form of motor has best prospects, although steam, petrol, compressed air have been used, compressed air has the advantage of cheapness, and plants are on the market at most reasonable figures. However, their engines leave much to be desired from an engineering point of view, as most of them leak horribly past the pistons, and through the valve especially are the valves faulty. However, with a properly made engine, great power for weight can be obtained through the medium of compressed air, as has been proven by numerous experiments in England and by Mr. Schober and myself.

#### The Schober-Funk Compressed Air Model

On the evening, May 22, 1915, Mr. Rudolph Funk and Mr. Frank Schober demonstrated their first motor-driven model aeroplane at the Aero Science Club. The model which was a specimen of their excellent workmanship, proved very disastrous, while pumping the reservoir one of the caps flew off the tank, wrecking the model beyond repair. The accident was the cause of poor spinning of the caps which were made outside.

**Fuselage—**  
The model was a tractor monoplane of their own design, entirely constructed of metal. The fuselage cylindrical reservoir was made of very thin sheet bronze wound with piano wire, with caps soldered on each end.

**Planes—**  
The main plane had a span of 4 ft. 8 in., cord  $9\frac{1}{2}$  in. at the center, 8 in. at the tips, and a slight dihedral angle. It was built up entirely of flat steel wire with a bamboo main beam.

**Tail—**  
The heart shaped tail and keel were also built up of flat steel wire. The planes and keel were covered with tan china silk coated with model varnish.

**Chassis—**  
The landing chassis was constructed of heavy piano wire built strong to

protect the propeller. Special strong steel pressed wheels with rubber tires were employed, the front pair  $1\frac{3}{16}$ ; rear wheels  $2\frac{1}{4}$  in.

**Motor—**  
The motor is a two cylinder horizontally opposed. The pistons are fitted with leather cups, and the valve is a rotary one. The bore is  $\frac{3}{8}$  in. x  $\frac{1}{2}$  in. stroke, complete motor weighs  $1\frac{1}{4}$  ozs. The engine is driven by compressed air stored in a bronze cylinder  $26 \times 2\frac{1}{2}$  ins. in diameter, weighs 12 ozs. A tractor propeller 15 ins. supplies a thrust of 6 oz. at 250 lbs. pressure lasting one and one-half minutes, but a real flying thrust only lasts for half a minute.

The complete machine weighs 2 lbs.

#### Aero Science Club

By G. A. Cavanagh

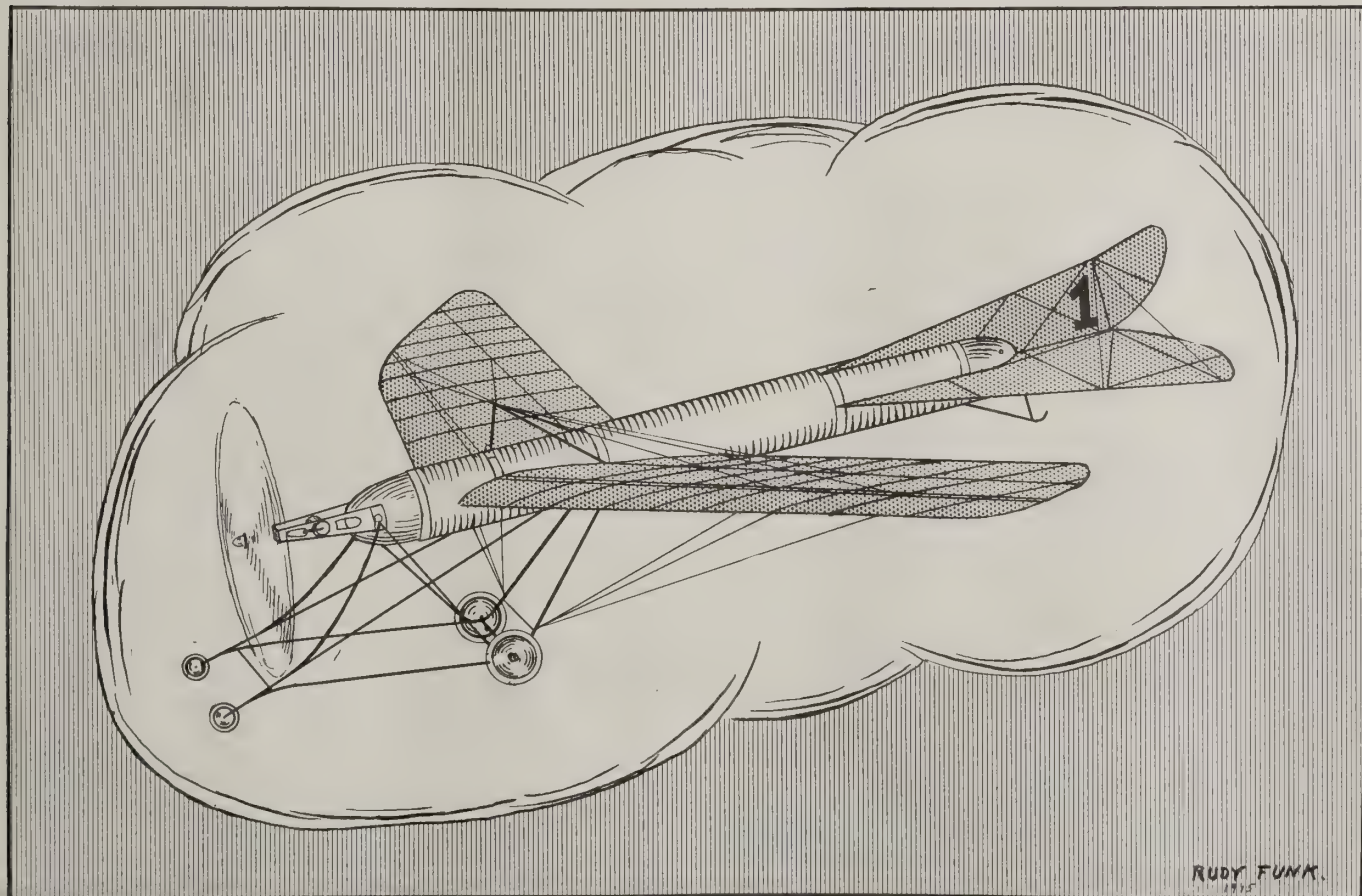
On May 29th, a very satisfactory meeting was held. Mr. Phipps reported that he and Mr. McLaughlin were working out the complete design for the Club's new machine and that in all probability it would be ready to present to the Club at the following meeting. The place to build the machine was decided upon by the Club. Mr. Schoeber was appointed to look into the matter of leasing the shop which he reported would soon be vacant. The shop is in a good location in Brooklyn and it is believed that this will enable more members to work upon the machine than would have done so had they decided to build at Oakwood Heights as the trip to Oakwood Heights would have made it inconvenient for many. It is believed that only a short time will be necessary for the construction of the machine as the wings are already completed so as soon as it is ready to assemble it will be taken to Oakwood Heights and tried out. Some members have already expressed their intentions to camp there while the machine is being put in shape and tried out.

A new clause was added to the rules of the Efficiency Contest, the clause being that a separate event be held for the judging of the gliding ability of the models as many thought that this would be hard to judge in with the other events. Many members are already prepared to enter the contest and many have expressed their intentions of participating.

Another contest is being planned for Columbus Day, October 12th. This contest will be for models propelled by motors other than rubber power which has heretofore been used by most model flyers. Full details of this contest will appear in a subsequent bulletin.

For further particulars address the Secretary, G. A. Cavanagh, 49 Lott Avenue, Woodhaven, Long Island.

(Continued on Page 283)







Aeronitis is a pleasant, a decidedly infectious ailment, which makes its victims "flighty," mentally and physically. At times it has a pathologic, at times merely a psychologic foundation. It already has affected thousands; it will get the rest of the world in time. Its symptoms vary in each case and each victim has a different story to tell. When you finish this column **you** may be infected, and may have a story all of your own. If so, your contribution will be welcomed by your fellow **aeronuts**. Initials of contributor will be printed when requested.

You can say what you like but you can't deny that this is a flighty race.

The motor is the heart, the man is the brain of the aeroplane. If both are sound there is the making of a world record.

Some folks hold high positions, others are only up in the air.

Some aeroplanes require a big motor, some a small one to do the same amount of work: What's your horsepower?

#### There Is Room Higher-Up But—

There is room higher up—miles of it;  
And you can get there if you know how to pilot your aeroplane;  
And you can stay there if you have the brain and the will;  
And you can be the highest man;  
And people will look up at you;  
And you will look down at them;  
And you can throw things at them;  
While they can't throw things at you;  
But while you are up—the highest man—  
Don't let your height obsess your brain;  
For if you miss you are apt to fall,  
And the higher you are the longer the fall;  
And the longer the fall the harder the crash;  
And the harder the crash, the more it hurts;  
That is why you should think and train before you try high flying.

#### FATE.



Alpine Climber: "Humph! Ouch! And I took to Alpine climbing just to avoid being run over."  
—From Scribner's

#### Sport Terms

**Coward**—A man whose drafts on his heart are returned marked "no account."

**A Good Loser**—The man who can wear a mask becomingly.

**A Good Sport**—The man who can win and forget it.

**Courage**—The real creed of life.

**Critic**—A sterile beldam trying to bring up other people's children.

**Knocker**—The fool who, if allowed to live, is always a dis-integrating force.—*Collier's Weekly*.

#### Beechisms

We were recently aroused from a fit of abstraction during the period between two flights by the following bit of dialogue:

Small girl to another: "I do wish Mr. Beech would stay here all the time."

Lady, with smiling curiosity: "Now, just why do you want a flying machine to stay at the Isle of Hope all the summer?"

S. G.: "I don't care nothing about the flying machine, but before Mr. Beech came here all the girls said my papa was the ugliest man in town."

A few years ago we submitted the following paragraph to the editor of an aeronautical periodical:

"When president-elect Wilson was approached to enlist his support for Federal aid to the good roads movement he laughingly replied that at the present rate of aeronautical development aeroplanes would soon be the national vehicle of travel."

The editor in question got very red in the face and viciously slashing the paragraph with a blue pencil exclaimed: "I'm not going to advertise Woodrow Wilson."

A four-stroke cycle:

The cities say the states should organize the contemplated Aeronautic Reserve;

The States say the Federal government ought organize it;

The Federal government says the aviators themselves ought to organize it;

The aviators say that the cities ought to at least extend them an invitation.

If the aviators do decide to offer the government a fully equipped Aeronautic Reserve, care must be taken that it be offered on such a tray as will not offend the discriminating tastes of the "boys" at Washington.

Heard on Pennsylvania Avenue:

First Congressman:—"What's the matter with them fellows, didn't I vote to buy the first aeroplane the government ever had?"

Second Con. man:—"Say, Jim, you had ought to have bought a glass case to put that machine in."

Third Con. man:—"Let's frame a bill making it illegal for any foreign government to operate aeroplanes in the territory of the United States."

During a small meet held in Chicago in the early part of '12 a carnival "barker" whose services had been requisitioned as announcer, was asked to announce a demonstration flight by aviator Drew in a machine which was supposed to have INHERENT STABILITY. He convulsed the aviators and aerofans by rendering in stentorian tones the following:

"Ladies and Gentlemen:—aviator Andrew Drew will now give you a demonstration in the famous umbrellaplane, a machine that shows great INHERITED STUPIDITY."

Carranza's men who shot at a U. S. biplane were trying to maintain Mexico's domination of the air on the North American Continent.



# Model News—Continued from Page 281

Illinois Model Aero Club  
By P. E. Weaver, Secretary

At the last club meeting, the Board of Governors appointed Mr. Carl Borkland, a committee of one, to arrange plans for the coming high-school campaign, which the club will make in the interests of model aeronautics.

On Saturday, May 22, the fourth of the series of spring meets was successfully held. This was the first meet in which duration counted in the scoring and consequently much interest centered on it from the start. In the previous meets, flights of 60 sec. duration were seldom made and a much higher duration was not expected in this meet.

Thomas Hall, this being his first appearance in the series, opened the meet with a flight of 70 sec., and quickly followed it with one of 96½ seconds and 1,626 ft.; this being a new club duration record, superseding D. A. Lathrop's 83 sec. Ward Pease then placed second in distance with 1,290 ft. and for a long time it looked as though T. Hall's records would stand. However, toward the end of the meet, Ellis Cook made 101½ secs. followed by a flight of 143½ and 990 ft. for third distance. Later this duration was increased to 157 sec. on his third flight. Just previous to this Charles Arens made 66½ sec. for third in duration.

Donavon A. Lathrop had out a small tractor of rather large span that was doing some speedy and stable flying. His best distance was 521 ft. and his duration was 32 sec., although he made a great many flights between 25 and 30 sec. duration. These flights, although not records, show good, for his model embodied some very interesting and novel features which seem to help the flying qualities of the model.

The results for the first six are as follows:

Distance		Points	
1. Thomas Hall.....	1626 ft.	1. Thomas Hall.....	80.7
2. Ward Pease.....	1290 ft.	2. Ellis Cook.....	80.4
3. Ellis Cook.....	990 ft.	3. Ward Pease.....	52.5
Duration		Points	
1. Ellis Cook.....	157 sec.	1. Thomas Hall.....	80.7
2. Thomas Hall.....	96½ sec.	2. Ellis Cook.....	80.4
3. Charles Arens.....	66½ sec.	3. Ward Pease.....	52.5
4. Joseph Lucas.....	56 sec.	4. Charles Arens.....	47.4
5. Ward Pease.....	48 sec.	5. Leonard Collins.....	31.7
6. Leonard Collins.....	46½ sec.	6. Donavon Lathrop.....	26.2

The following day, May 23, Thomas Hall, Ellis Cook, and Donavon Lathrop were out again attempting to better their marks of the day before. Owing to a drizzling rain nothing of importance could be made.

Thomas Hall made a duration of 80 secs., Ellis Cook made 148½, and Donavon Lathrop could get nothing better than 22 sec.

On Saturday, May 29, the last meet of the series will be held at the Cicero Flying Field. This meet, like the one on May 22, will be for both distance and duration for hand launched models.

The schedule of meets for the summer and early fall has been arranged and will be announced shortly.

On July 10 and 11 a dual meet will be held with the Milwaukee Model Aero Club at this club's flying field, and a return meet is being arranged to be held at the Wisconsin State Fair in the Fall. These meets will undoubtedly create a great deal of enthusiasm in both cities and both clubs will profit in the increase in membership which will develop.

## The Pacific Northwest Model Aero Club

By Robert La Tour, Secretary

The Pacific Northwest Model Aero Club held its second contest of the year at Harbor Island, Saturday, May 22nd, for hand launched models in a combined meet for distance and duration. The former records of this club of 900 ft. and 39 seconds' duration for these events were easily broken. R. La Tour's model travelling 2,120 ft. and W. Dettman's model remaining in the air eighty-six seconds.

Pictures of these models in flight will be run in future issues. Also the descriptions.

## Hydroaeroplane Mail Pouch

An interesting exhibit came to the Manchester, N. H. post-office recently in the regular channels. It was the first pouch used to carry mail by means of a hydroaeroplane from Corpus Christi, Tex., to Aransas, Tex., March 29, 1913. The pouch is covered with the signatures of post-office employees in many states of the Union, ranging from Maine to Washington and Oregon. It is a regular cloth pouch and constitutes, together with its historic trip and the many signatures, an interesting relic.

## Aviator Brownfield Makes Successful Flights in New Machine of His Own Construction

Flying at an altitude of 700 feet, Chris Brownfield, in a Curtiss type biplane of his own construction, made several successful flights recently at Zanesville, Ohio. He is now fitting a searchlight to the machine and will attempt some night flying demonstrations.

## Niles To Have Busy Season

From all present indications it would seem that Charlie Niles will have a busy season this year. Already he has a large number of engagements booked up and this week will begin the first of his exhibitions at Dayton, using a standard Bleriot, not his new looper. On May 24th he is scheduled to fly at Ogdensburg, N. Y., while Watertown, N. Y. is striving to have him give an exhibition there on May 22nd. Niles' new looping Bleriot, which will be equipped with a 90 h.p. Gyro, will soon be ready and will be tried out at the Garden City Aerodrome, N. Y.

## Norwalk, Ohio

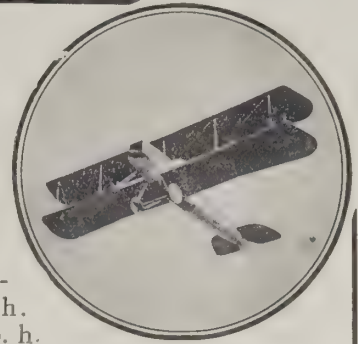
Paul Wilbur is finishing a flying boat of the Curtiss Type and has several exhibition dates already booked. He has sold his land machines and will do only over water flying this season.

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Flying Boats  
Aeroplanes

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COMPLETE SET OF SIX  
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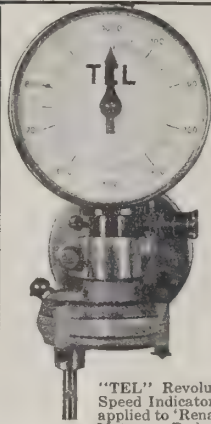
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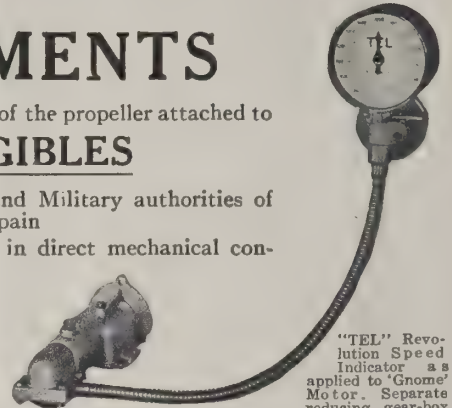
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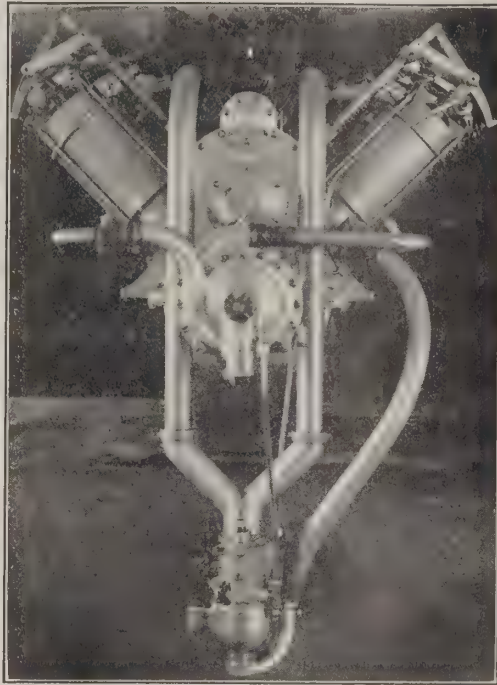
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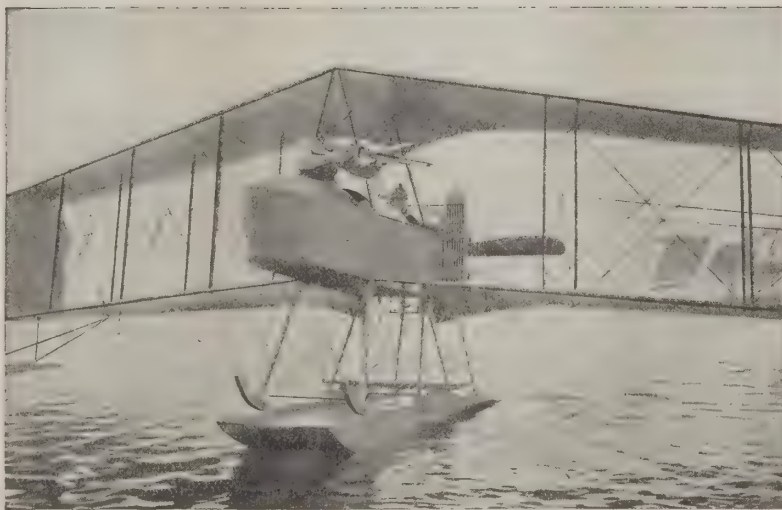
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# AERIAL AGE

## WEEKLY

Vol. I. No. 13.

JUNE 14, 1915

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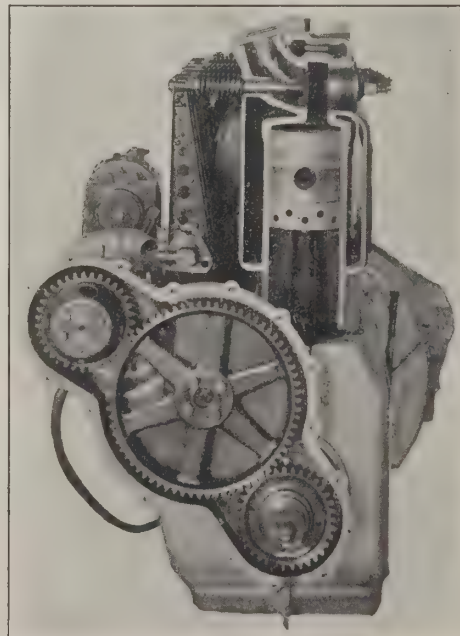
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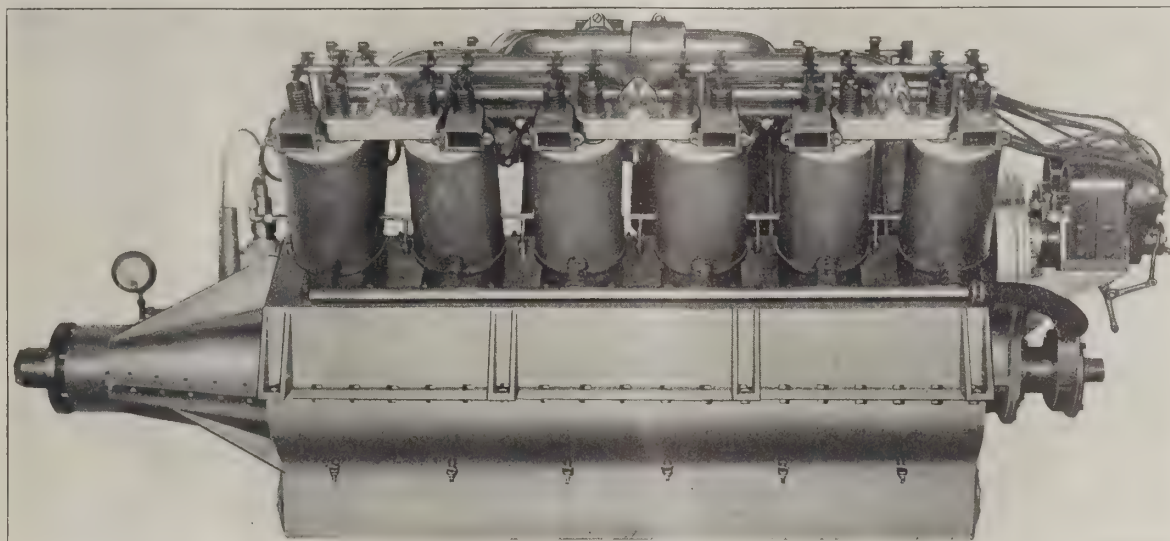
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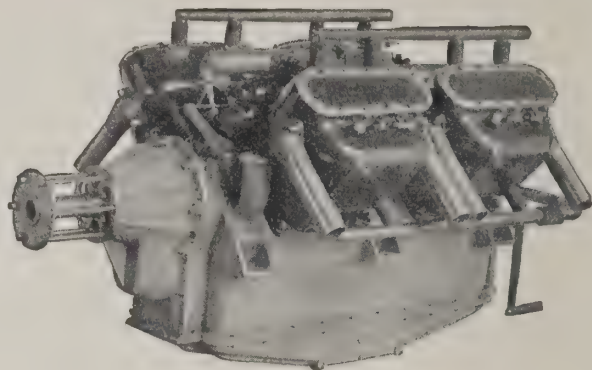
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The 8 cylinder 140 Horse-Power

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### Aeronautical Motor

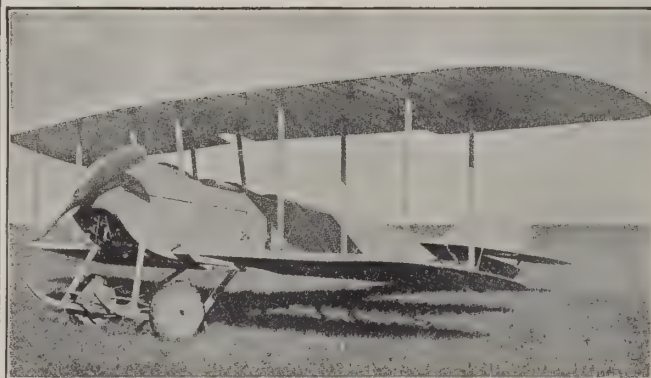
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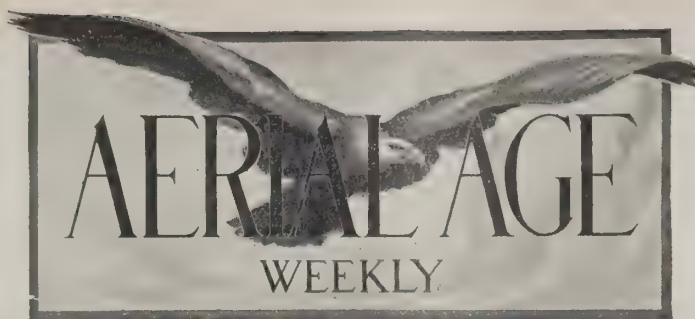
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G. DOUGLAS WARDROP  
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SUBSCRIPTION RATES  
Domestic, \$4.00 per year  
Foreign, \$5.00

ADVERTISING RATES:  
One page \$80.00, Half \$45.00  
Quarter \$25.00, Eighth \$14.00  
Sixteen \$8.00.

Discounts: for 13 consecutive insertions, 10%; for 26 consecutive insertions, 15%; for 52 consecutive insertions, 17%.

Cash discount, 3%, 10 days.

For other rates see Classified Department

PUBLISHED WEEKLY BY THE AERIAL AGE COMPANY, Inc., 116 West 32nd Street, New York City

Entered as Second-Class Matter March 25, 1915, at the Post Office at New York, N. Y., under the Act of March 3, 1879

VOL. I.

NEW YORK, June 14, 1915

No. 13

## \$16,000,000 for Aeroplanes and Motors

A FEW days ago a cable to the press announced that England was planning to spend \$16,000,000 in aeroplanes and aeronautical motors in the United States. The amount appeared enormous to the newspapers and they inquired at the Aero Club of America for information which might substantiate the cable. Mr. Henry Woodhouse, Governor of the Club and contributing editor of *Aerial Age* in an interview to the *New York Times* gave the information reprinted herewith:

"Two contracts, each of which calls for the speedy delivery of 1,000 aeroplane engines of high power are going begging in this country for lack of takers. The aeroplane engines are wanted for European nations which are able to furnish all other parts of the aeroplanes. One of the contracts is offered by persons from England, while the other is offered by representatives of Italy.

"Officials of the Aero Club of America said yesterday that their assistance had been sought by persons trying to place each of the orders, but that their most urgent appeals to large motor manufacturing plants had been in vain.

"The reason, they said, was that the American automobile manufacturers engaging in the war trade were behind on orders for motor trucks with their engine works running to full capacity, while all of the plants devoted to the building of aeroplane engines were busy in filling orders for completed aeroplanes.

"Henry Woodhouse, a governor of the Aero Club, said that it would be no exaggeration to say that orders amounting to \$16,000,000 had been placed in this country for aeroplanes for the various European nations, and that five of the best equipped aeroplane and motor factories were devoting all their energies to filling orders for aeroplanes to be used in Europe.

"Apparently many of the orders for aeroplanes were placed in this country because the European Governments had to have the motors and took the machines in completed form because the American manufacturers would not sell the motors alone. Buyers from England, it was said yesterday, favored biplanes of the 'pusher' type with 130 horsepower engines. They found that American manufacturers had not experimented, as the British aeroplane makers had, with the 'pusher' biplanes, but had chosen instead to work out a type of tractor biplane for large engines. After finding that it would be impracticable to change factory conditions here, the British buyers placed orders for the tractor types.

"Men who have followed the progress of aviation in this country from the days when Wilbur Wright flew at thirty miles an hour with a twelve horsepower engine were keenly interested in the orders placed by

the British buyers. These buyers demanded 130 horsepower engines for the land-going machines, 160 horsepower engines for the over-water machines, and there were many orders for the 'America' type machines built by Glenn H. Curtiss and carrying two engines of 160 horsepower each.

"It was said that the large 'America' type machines were wanted for conveying British troops across the Channel, as the aeroplane pilot, perched high in the air, could easily detect a submarine, and give warning to the transports."

"The placing of these large orders in this country," said Mr. Woodhouse yesterday, "is of vital importance to the aeroplane industry, for it marks the coming of the aeroplane into its own. These aeroplanes are not wanted for isolated service. They are wanted so that aeroplane raids can be made with 1,000 flyers on the wing where one flyer now goes up aloft.

"In this country we do not yet think of making the aeroplane even a substantial sub-department of the Signal Corps. But in England the aeroplane has proved its worth so well that it has completely outgrown the Signal Corps. I have just received a copy of the Government's order putting into effect the new system of control of the flying corps.

"It is a 'wing' corps, and we soon will be hearing of the operations of the flying wing just as now we hear of the operations of the artillery battery, the cavalry troop, and the infantry company. The 'Wing Commander' will become a familiar title.

"From my conversations with buyers seeking aeroplanes here I have been astonished. They want one aeroplane to serve every single gun of the heavy artillery—to fly out in front and signal back where its shells are landing. Think what it will mean to have an aeroplane for each heavy gun in the European operations, and you will cease to be surprised at the \$16,000,000 order for aeroplanes in this country.

"Then they want a wing battalion for every single army division, to fly out ahead of its line of march or work above the enemy's trenches, bringing to the division commander the information that may help him crush the enemy.

"They want wing battalions to cruise up and down along the sea coasts, looking for submarines. You know that aviators have already proved that they can see objects which reflect the sunlight even when these objects are submerged at a great depth. Spotting submarines would be an easy task for members of a wing corps looking straight down at the ocean from high above it. Aeroplane escorts would have saved the *Lusitania*, just as they constantly save the troop ships plying between England and France. With aeroplanes in large numbers and bomb dropping equipment it may easily happen that the aeroplane may become the one deadly enemy of the submarine,



that will rid the sea of this new peril."

Our investigations prove the truth of the cable. Sixteen million dollars, and even more, will be spent by England alone if the constructors can supply her needs. Other countries will also spend large sums in aeroplanes and motors, how large will depend entirely on how well American constructors meet the demand.

### Secretary Daniels Predicts Coming of Large Warplanes

Prediction that war aircraft of the not distant future will be as fearful engines of destruction as the dread under-sea craft was made by Secretary Daniels in addressing the graduating class of the Naval Academy on June 4th.

"In the European war," he said, "there have been no surprises, no startling victories, no crushing defeats that could be called decisive. Slaughter there has been unprecedented, but the character of battles that stamped an enemy by taking him unawares has passed away. The effectiveness of the flanking movement has been seriously impaired. Why? The soaring scouts carry messages from trench to trench, and the sudden alarms that resulted in the routing of mighty armies became ancient history when the modern engine and gasoline enabled man to conquer the regions of the air.

"What we have seen in these swift-winged eagle eyes of the army or navy is but the dawn of the coming day when we shall make the heavens carry our war craft as easily as we navigate the sea with our dreadnoughts."

### "One Small Dirigible Contracted For, Three Good Aeroplanes Not Yet Ready, An Embryonic Aeronautical Service"— The Aeronautical Strength of Our Navy!

In responding to the toast "The Navy," at the Alumni dinner of the United States Naval Academy on June 2d, Rear Admiral Bradley A. Fiske, U. S. N. reiterated, in even more positive terms, the statement that he had made before the House Committee on Naval Affairs last Winter that the United States Navy was unprepared for war with any great power.

Admiral Fiske declared that all naval officers, American and foreign, knew that we had no tested war plans, no tested organization for war, no proper system of communications, no tested mobilization scheme.

After referring to officers whose work in the navy had made them conspicuous, Admiral Fiske said:

"But, we who are gathered in affectionate companionship tonight, mindful of the record of the navy of the past, noting the additions to the methods and instruments of war which the last few years have brought, and solicitous for the effectiveness of the navy of to-day, realize that the devotion to the navy will not of itself suffice. Let us estimate the situation briefly, and consider first what kind of an attack we should have to guard against. Evidently an attack by one of the great naval powers is the only kind we need consider. What would be the character of the attacking force? Clearly, the attacking force would be as great as the attacking power could spare, in order to insure its success and minimize its losses. This means that the attacking force would include battle cruisers, dreadnoughts, pre-dreadnoughts, scouts, cruisers, destroyers, mine depot ships, mine-layers, mine sweepers, airships and aeroplanes, all

fully manned and all strategically directed by a General Staff.

"What have we with which to oppose this force—a smaller number of dreadnoughts, pre-dreadnoughts and destroyers than the enemy would bring; no battle cruisers, no effective scouts, one airship recently contracted for, only three good aeroplanes not yet ready, an embryonic aeronautical service; two mine depot ships, one mine-layer and twelve mine sweepers; also about forty-five submarines of all kinds and ages, distributed over the Atlantic and Pacific Coasts, Panama, Hawaii, and the Philippines, none of which have ever attempted feats like those so effectively performed in foreign navies now, and an inadequate merchant marine from which to get auxiliaries. To man even this insufficient material, we have an enlisted personnel insufficient even for that, even in time of peace, and no trained reserve; and no General Staff or similar agency to direct the whole."

### Aeroplanes For the Coast Guard Newburyport (Mass.) News

A station in Marblehead would not only prove its worth in time of terrible strife but in time of peace. The services of its aircraft could be called into play on many ways but in none more so than in coastwise and ocean traffic.

As an auxiliary to the revenue cutter service aircraft would be of great advantage. The perfected hydroaeroplane, capable of long and sustained flights, could patrol steamship lines and keep a sharp watchout for the dangers that constantly beset water traffic.

Here is a concrete example of what the hydroaeroplane could do. The captain of an incoming steamer reports sighting a derelict 50 miles off Cape Cod. The derelict is a deadly peril. It may mean a collision, a foundering, a loss of hundreds, even thousands of lives.

The aviator is given the location of the derelict. Soon the propeller is whirling and the big machine is sweeping with bird-like speed out to sea. The aviator scans the blue ever stretching before him. Then he "picks up" the derelict. Circling over the hulk he drops a bomb. There is a giant splash and the derelict has vanished. A menace has been wiped out.

With Governor Walsh and Adjutant General Cole advocating a powerful modern fort at Nahant, it would not be surprising if the United States government in the not too distant future, will establish an aeroplane station at Marblehead, which will be protected by the giant guns of the Nahant fort.

### Do You Find Aerial Age on Your Newsstand?

¶ Through the American News Company we are already placing Ten Thousand copies weekly on the newsstands—but we want to place Fifty Thousand.

¶ We ask the co-operation of all our readers by requesting that they inform us whenever they find that AERIAL AGE is not obtainable at any newsstand—on the Street, in Hotels, in the Subway or Elevated Stations, or in the Railroad Depots.

¶ We shall heartily appreciate such co-operation.



# THE NEWS OF THE WEEK

## Art. Smith Entertained by Pacific Aero Club

Arthur Smith was recently a guest of the Pacific Aero Club at a theatre party at the Orpheum, a moving picture theatre of San Francisco.

Thirty officers and members of the club, with visiting aviators and others interested in aeronautics, attended the party.

At the conclusion of the regular Orpheum bill a motion picture was shown depicting Smith in his loops, upside down and cart-wheel flying and other spectacular performances.

## Baxter Adams Flies 48 Miles Cross-Country

In his 100 h.p. Curtiss biplane, Baxter Adams, on May 31st, flew from Logansport to Elwood, Ind., where he was scheduled to give an exhibition. The 48 miles between the two cities was covered in 50 minutes which was good time considering the fact that he was flying against a stiff wind the entire distance.

Mr. Adams has been doing a good bit of cross-country work this season, as practice preliminary to the trans-continental races which he is anticipating entering.

## Thomas to Erect New Factory

The Thomas Brothers Aeroplane Company of Ithaca, N. Y., is so pressed with orders for the splendid new Thomas Military tractors, that in spite of their present splendid building facilities, they have been forced to increase their space and arrangements are being made for the quick erecting of hangars and shops on a part of the Lake front at Ithaca, N. Y.

Preliminary arrangements have already been made with the Ithaca Board of Public Works, and it is expected that the deal will be closed shortly. The leasing of this land will mean the establishment of an aero station and the erection of a large hangar.

On the north side of the hangar the Thomas company plans to provide quarters for its hydroaeroplanes so that they may easily be taken to the water in readiness for a flight. On the south side the land tractors will be housed. To the southward stretches a long tract of land over which the tractors and aeroplanes may commence their flight.

## Kenneth Jacquith Flying at Atlantic City

Kenneth Jacquith continues to delight thousands at Atlantic City with his Curtiss flying boat. On May 26th he carried Miss Clara Purzner, secretary to Mayor William Riddle for a 20-minute flight at an altitude of 1,000 feet. The Mayor was so interested in his secretary's trip that he closed the city hall for an hour to watch the flight.

## Niles Makes Fine Flights

Charles Niles has just returned after a series of flights in the northern part of New York State. At Ogdensburg he was in the

air over twenty minutes during which time he flew upside down and performed other manoeuvres, while at an altitude of 4,000 feet. It is stated that Niles' flights were much prettier than Beachey's to watch. Within two minutes after the announcement, as megaphoned by the announcer, he was off the ground.

## Russian Dirigible Inventor Arrives

Capt. Michel de Roudacow, who was a Russian military attache in Paris at the beginning of the war and who was arrested by the Kaiser's soldiers at Frankfort while on his way to Petrograd and released after he had sworn not to bear arms against Germany, arrived by the Scandinavian-American liner Oscar II.

He is the inventor of a new dirigible that he says will be more effective as an aerial fighter than the Zeppelins. He is here to study American aerial machines. He hopes to complete his machine in time to knock out the German air raiders.

## Sturtevant News

The demands upon the B. F. Sturtevant Company of Boston for their new 140 H. P. 8-cylinder Aeronautical Motors have been so large that the facilities for manufacturing the same have been increased extensively. The factory is now running day and night and the motors are being turned out at the rate of two a day in order to complete the orders on hand. This number will shortly be increased to four a day, and orders for shipment of motors after August 1st are now being rapidly filled.

## Curtiss News

It is expected that the new Curtiss Training School at Buffalo will be in operation within a few days. The operator and mechanic to take charge of the Flying Boat which Mr. Curtiss has presented to the Naval Militia will be among the first to be tutored. The site is adjacent to the Buffalo Yacht Club and is ideal for the work.

Mr. B. H. Kendrick's flying boat has just been launched in Hammondsport and will soon be on its way to Atlantic City where Mr. Kendrick expects to carry passengers throughout the coming season.

There is unusual activity in Toronto aviation circles centered around the Curtiss plant and training schools. Mr. McCurdy is in charge of operations there and the last reports place the number of students in actual work at more than thirty with about seven hundred on the waiting list. Both land and water flying is being taught. The camp was recently inspected by the Duke of Connaught and his staff, and His Excellency expressed himself as being highly satisfied with the training being received.

*Mary Pickford starting for a flight with Glenn L. Martin and Mr. Kauffman, manager of the Famous Players Company. Mr. Martin cautioning Miss Pickford to tuck her curls under her bonnet. Mrs. Pickford, Miss Pickford's mother, who witnessed the start, was afraid for the safety of her daughter, and warned Mr. Martin "to be sure and hold Mary in. And don't let Mr. Martin go high or dip," wailed the frightened mother. Kauffman, always striving to please, started in doing all three things at once. The engine popped and sputtered and then began its droning hum; the big machine rolled slowly around and jumped off down the course; everybody wave a good-by and America's most famous actress was in the air.*







Alex. McRae in Wright Machine, showing new Wright wheel control, at the School at Dayton, Ohio

#### Roger Jannus Back in Baltimore

The Park Board of Baltimore recently granted the brothers—Antony and Roger—permission to erect a flying stage at Fort McHenry Park, and selected a site for them, where spectators would have ample room. This stage has been completed and in a machine constructed by them—the first flying boat to be erected in the city—Roger will begin his flights some time this month. For several months Jannus has been at the San Diego (Cal.) Exposition, where he operated an aerial taxi route.

Tony Jannus is now in charge of the construction of a war plane, which it is rumored will prove the dreadnought of the air, so far as biplanes are concerned. The machine is being built at the plant of the Curtiss Aeroplane and Motor Company, of Toronto.

#### Italian Army Adopts Turner Aviaphone

Following exhaustive tests made at the Mirafiori, Turin, government aeronautical experimental station, the Minister of War has given order to adopt the Turner Aviaphone for the Italian Aviation Corps.

The Turner Aviaphone was adopted for use in the Russian Navy Aviation Corps a year ago and large orders have been delivered by the General Acoustic Company of 220 West 42d Street, New York City.

John Kaminski, the Milwaukee aviator, made a successful test flight from McKinley Beach recently in a new type of hydro-aeroplane, built by Paul Knaack. He expects to make numerous flights with it at the beach.

#### The Toronto Curtiss School

Vice-Admiral Kingsmill passed seventeen new candidates for the Toronto Curtiss School and the camp of instruction. The naval officer, accompanied by Miss McKeand, visited the school, and while there several beautiful flights were made. The first flight was closely followed by the Admiral. The pilot took the craft about a quarter way over the Bay toward the foot of Yonge street and then lifted her in the air, rising to an altitude of about one thousand feet. She then circled from the eastern end of the bay to Bathurst street several times. Descending she planed to several lower heights, and following several circles came down to the water again and glided up to the hangars.

Capt. Virginius E. Clark, U. S. A., Mrs. Clark and their children are in New York at the Hotel Astor for a short visit.

Three months leave has been granted to Capt. Townsend F. Dodd, aviation officer, Signal Corps.

The famous flying boat which met a mishap at Detroit recently will again be in service soon. It will be equipped with the 120 h.p. Maximotor, and will be used by Edward Davidson and Corbin Van Hussen for training and passenger carrying.

#### Garden City Aerodrome

There was very little activity at the field during the past week with the exception of the flying accomplished Monday. Stevenson MacGordon in the 90 h.p. Gyro motored Mayo tractor was out a couple of times during the week while P. C. Millman made one flight in the 80 h.p. Schmitt monocoque. On Friday, John Guy Gilpatric had out the 110 h.p. Heinrich tractor for the first time since last Saturday and made a short test flight.

#### Argentina Wants Balloon Race

Argentina is anxious to win international balloon honors, but owing to the war will have to postpone her effort to reach the top in aeronautics for another year at least. America now holds the Coupe Internationale des Aeronauts by reason of the victory in France, achieved in 1913, by R. A. D. Preston and Ralph Upson. The contest to have been held last year was postponed when the European war began.

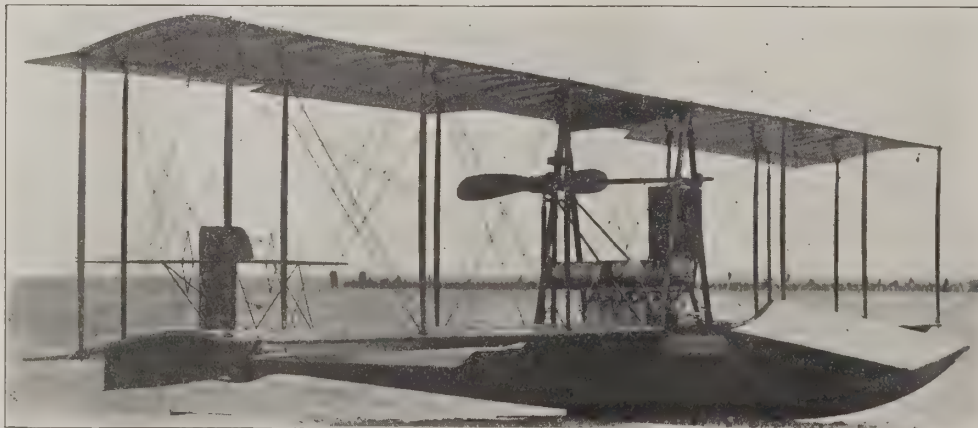
The receipt of a cable message recently from the Aero Club Argentine offering to enter the race this year called forth the announcement of a further postponement until next year. Information to this effect has been sent to the Argentine Club by the Aero Club of America.

#### Thompson Loops the Loop with Caleb Bragg

At Indianapolis on May 30th, DeLloyd Thompson gave one of the most thrilling exhibitions that has ever been seen at the speedway. Before a crowd of several thousand people he gave his regular program of looping, flying upside down, making perpendicular drops, and racing Barney Oldfield, despite a drenching rain.

Thompson made three flights. On his first trip he reached an altitude of 800 feet, at one time going behind a cloud, which completely hid him from view. He then stopped his engine and shot through the clouds headforemost toward the ground. Later he looped the loop several times and then came to the ground to give Caleb Bragg a ride. Bragg, who is an amateur aviator, had never experienced the sensation of looping the loop before and declared that he enjoyed the trip when he landed.

The race between Thompson, who used his biplane, and Oldfield, was an interesting feature. Barney borrowed Gil Anderson's Stutz and gave the aviator a pretty race.



The new Benoist Flying Boat, one of the few flying boats fitted with a motor in the hull, and driving the propeller through sprocket and chain transmission.



### A Successful Biplane Built by a Boy

The Laird Tractor built and flown by Emil Laird, one of the boys of the Illinois Model Aero Club. It is the smallest practical flyer in America and is powered with a 15 h. p. 4 cylinder vertical air-cooled motor built by Alfred A. Hofer, Mr. Chance Vought's assistant in the construction of the splendid new Mayo Biplane.



### Military Aviation News

Lieutenants Kilner, Fitzgerald and Sutton finished the junior military aviator tests Saturday, May 15. In order to complete the straightaway 90-mile cross country flights, Lieutenant Sutton in No. 32 and Lieutenant Kilner in No. 27 flew from here to Long Beach, California, each making the trip in about two hours. They were considerably held back by strong head winds. The same afternoon Lieutenant Fitzgerald in No. 32 and Lieutenant Kilner in No. 27 left Long Beach at 2:10 p.m., reaching their destination neck and neck, in an hour and forty-six minutes. Both machines glided in over the hangars and landed abreast.

The scheme of organization for the First Aero Squadron is now almost complete. Captain B. D. Foulois, the Squadron Commander, is responsible for the details of the organization. He has been engaged on this difficult undertaking for the past eighteen months and has produced a very thorough and finished system. Captain Foulois is the first military aviator in the world and has had a breadth of experience in both heavier and lighter than air craft, which makes him eminently qualified for this task. A brief description of the tentative organization of the Squadron is given herewith. At present there are eleven officers in the Squadron, and it is expected that there will be eight flying machines with the organization by July 1st. These machines are of the Curtiss J. N. S. type, and are now at the Curtiss factory awaiting the results of the tests of one. It is contemplated that fourteen motor trucks and two machine shop trucks, all four-wheel drive, and six motorcycles will constitute the transportation section, which is not yet complete in vehicles. The squadron is now organized for purposes of instruction and training into the following twelve sections: Headquarters, supply, engineer, transportation and eight flying sections.

The Chinese Imperial Commercial Delegation to the California Expositions visited the island during the week.

Lieutenant Morrow has returned from sick leave.

First Lieutenant Schurmeier, Medical Reserve Corps, has gone on leave to pursue special studies. First Lieutenant G. B. Worthington, Medical Reserve Corps, is temporarily filling his place.

First Lieutenant Herbert A. Dargue, Aviation Section, has reported for duty from the Philippines where he has been engaged on flying duty for two years.

### PENNSYLVANIA NEWS

The monthly meeting of the Aero Club of Pennsylvania was held in the Green Room of the Bellevue-Stratford Hotel, Philadelphia, evening of May 21st. The increasing interest of the members was shown by the much larger attendance than usual. Capt. Hugh L. Willoughby, retired naval officer and hydroaeroplane builder, gave an informal talk on the great value of the aeroplane as a protective measure against submarine attack. Capt. Willoughby's most interesting statement was as follows: "Few people see the possibilities that there are in the aeroplane for locating submarines and protecting ships. A battleship is almost helpless against a torpedo. The only protective measure that it seems possible to develop now is the aeroplane. If the Lusitania had been guarded from the air above, the terrific disaster of its sinking might have been avoided."

A call was issued by President Steinmetz of the Club, requesting every licensed aviator in the Philadelphia "air zone" to report at once to the officers of the Club in order that proper preparations can be made for the National Aeroplane Contest which starts July 4th.

To aid the cause, action was taken by the Club to raise a fund of \$1,000 for the erection of a large hangar. The Club augmented the fund to the extent of \$100 and up to date several more substantial subscriptions have been received. It is hoped that at the next meeting definite action can be taken and work started, so the hangar will be ready for use by the visiting aviators during the competition.

Through the efforts of President Steinmetz and former President Wynne, Secretary Daniels of the Navy has granted the Aero Club of Pennsylvania full permission to use a plot of ground just east of the marine barracks, at the League Island Navy Yard, for the erection of the Club hangar, repair shop, also as an official landing station for all aircraft arriving in and departing from the city.

### Philadelphia Aero Club

Visiting members of the junior organization, the Philadelphia Aero Club, reported that the tractor biplane upon which their club members had been working for some time, is nearly finished and ready for trial flights. Designed by Percy Pierce and fellow members of the club there is every reason to think that the plane should prove a success. It will be used principally as a training plane for the members of their club.

Pupils awaiting the opening of the Texas School of Aviation at Dallas.





# The Sturtevant-Motored Christofferson Tractor Biplane

By Walter H. Phipps

**T**HE new Christofferson military tractor biplane, designed by Mr. Silas Christofferson, is an original product embodying many of the features characteristic of the splendid Christofferson flying boats. This resemblance to the flying boat type is especially noticeable as regards the wings, ailerons and the details of construction. All the fittings are so designed as to enable quick assembly and take-down and it is figured that the machine can be set up by 3 men in from twenty to thirty minutes and knocked down in ten to fifteen minutes. Special quick detachable turnbuckles and sockets are used and these are so designed that the guy wiring can be disconnected and reconnected without changing the tension or adjustment.

The machine is arranged for pilot and passenger, seated in tandem, and is equipped with either single or double controls as desired. Power installation consists of one of the new high-speed four-cylinder Sturtevant motors and its estimated speed range with this engine is from 45 to 75 miles per hour.

It will be noticed that the upper main plane as is the case on the flying boat, has a very pronounced overhang braced top and bottom with guy wires. They are of characteristic Christofferson shape having the ends of the wings rounded off in front.

## General Specifications

The main planes are divided into four sections, two upper and two lower sections. These planes are set at a slight dihedral angle to aid in the lateral stability. The top sections are 23 feet 5 inches over all, and are joined together by a special fitting and are supported by means of steel tubing with special quick detachable sockets. The lower sections are each 15 feet 3 inches long, and are attached to the fuselage by means of steel clips. The chord is 5 feet 6 inches, giving an effective area of 375 square feet. The gap is 5 feet 9 inches. The wings section was evolved by Mr. Christofferson after much experiment, and is designed to give the maximum speed, lift, and gliding angle with the least drift. Also, the section is calculated so as to diminish the large shift of the center of pressure with large changes in the angle of incidence. This is accomplished by slightly turning up the entering and trailing edges of the bottom of the section.

The construction of the planes is very strong, solid, and very light in weight. Spruce is used for construction. The main spars are of I-beam section, and are of laminated spruce. These beams are so constructed that the web of the beam is perpendicular to the uprights of the fuselage, thus enabling easy fitting of planes and body. The front beam of the upper planes curves around and meets the rear spar at the outer ends. This makes an arch structure which is very strong. The beams are spaced 3 feet 6 inches, and are located 10 inches and 14 inches from the entering and trailing edges, respectively.

The ribs are of I-beam section, with channeled feet and swan web. The ribs are spaced according to their distance from the fuselage, those further out being spaced proportionately further apart.

The planes are braced internally by means of wooden dowel, and all wood pieces are glued together and the whole covered liberally with spar varnish. The cloth used is high-grade Irish linen, "doped" with Christolite. These planes possess a high gloss, and are weatherproof. The cloth is fastened to the ribs by means of D-shaped wooden strips, making a very strong fastening.

The struts are of streamline form, and are laminated laterally, giving great strength. These fit into special sockets so made as to allow the planes to be folded together by loosening four guy wires on each side.

The guy-wiring is of 2,300-pound steel cable, attached to special designed quick-detachable turn-buckles and sockets.

## Fuselage

The fuselage is 21 feet long, 2 feet 2 inches deep, and 2 feet 6 inches wide, and is Mr. Christofferson's original design. The fore part is rectangular, while the rear portion is oval in shape. This method reduces the resistance to a very great degree. The fuselage is divided into two sections, and these are joined together by means of special steel sockets. The covering of the fuselage is a thin coating of wood, highly finished. The section around the motor is metal covered, and a hood, similar to that of an automobile is fitted. The "lines" of the fuselage conform to streamline requirements. There are two cockpits fitted for the pilot and passenger. These are padded around the edges to protect the occupants in case of a fall. The interior is upholstered in rich brown leather, and the finish is of the highest possible grade. Considering its construction, the fuselage is remarkably light in weight.

## Landing Gear

The landing gear is a three-wheel arrangement, designed by Mr. Christofferson, and very thoroughly tested by him in rough landings, plowed ground, and other landing difficulties, and has withstood the "test of time." It is constructed of two U-shaped laminated spruce members, which comprise the support for the two rear wheels, with laminated members running to the front wheel and thence to the fore part of the fuselage. The rear wheels are 26 inches in diameter, fitted with Goodyear 4-inch tires. They are attached to a steel axle which passes through a bearing and spring suspension similar to that of a railway car truck. The front wheel is 20 inches in diameter, fitted with a 4-inch tire. All the wheels are encased in aluminum discs. Considering its great strength, the weight of the landing device is remarkably small.

## Auxiliary Planes

The ailerons are of the shape shown, and are constructed in the same manner as the main planes. They are operated in conjunction with each other by means of the standard shoulder fork. The aileron operating levers are so arranged as to allow all control wires to pass along the lower plane, thus enabling easy and quick inspection. The total aileron area is 47 square feet.

The rudder is semi-circular, with an area of 15.5 square feet, on each side.

The vertical stabilizing fin has an area of 4.75 square feet.

The horizontal stabilizer has an area of 25 square feet, and is arranged for quick detaching along with the elevating plane.

The elevating plane is 9 feet 6 inches by 2 feet 4 inches, with an area of 19.5 square feet. All of these auxiliary planes are solidly and well built. The system of control is the standard shoulder yoke and steering column.

## Propulsion

The motive power equipment consists of a 100 H.P. four-cylinder, high speed, Sturtevant water-cooled motor. The propeller is 9 feet 6 inches diameter, geared down 1:2 on account of the high motor speed. The engine mounting is of laminated ash members, suitably braced to the fuselage members.

The gasoline tank is located underneath the passenger's seat, and is force fed to the carburetor. Foot and hand throttles are fitted to enable long or short flights to be made with equal ease.

The radiating system is unique, and is Mr. Christofferson's design to do away with the enormous resistance of the present type of radiator. The front of the fuselage underneath the motor contains the radiator, which is made of a number of copper tubes fitting into "heads" at each end. The front end of the hood is made to serve as a reserve tank for the radiator, the system being thermal-force-feed. It has proven remarkably efficient in cooling, as well as in aerodynamical efficiency, for one of the greatest sources of resistance in the old types has been the enormous expanse of radiator surface presented to the air when in flight.

## Specifications

Type: Tractor Biplane, Military Type.

Construction: Wood, steel, cloth.

Number of Seats: 2.

Span Top: 47' 10".

Span Bottom: 33' 0".

Chord: 5' 6".

Gap: 5' 9".

Area: 375 square feet.

Length Over All: 25' 0".

Type of Body: Rectangular forward, oval in rear, wood covered.

Landing Gear: Three wheel. Christofferson. Spring rear wheels.

Lateral Control: Ailerons, Farman type.

Motor, Make: Sturtevant.

Motor, Type: Four-cylinder high speed, watercooled vertical.

Motor, Horse-Power: 100.

Motor, Bore and Stroke: 4 1/2 x 6.

Fuel Capacity: 40 gallons.

Propeller: 9-foot diameter.

Propeller Position: Tractor, geared down 1-to-2.

Speed Range Loaded: 75-80 M.P.H. Minimum, 40-45 M.P.H.

Climbing Speed: 750 ft. per minute. (Estimated).

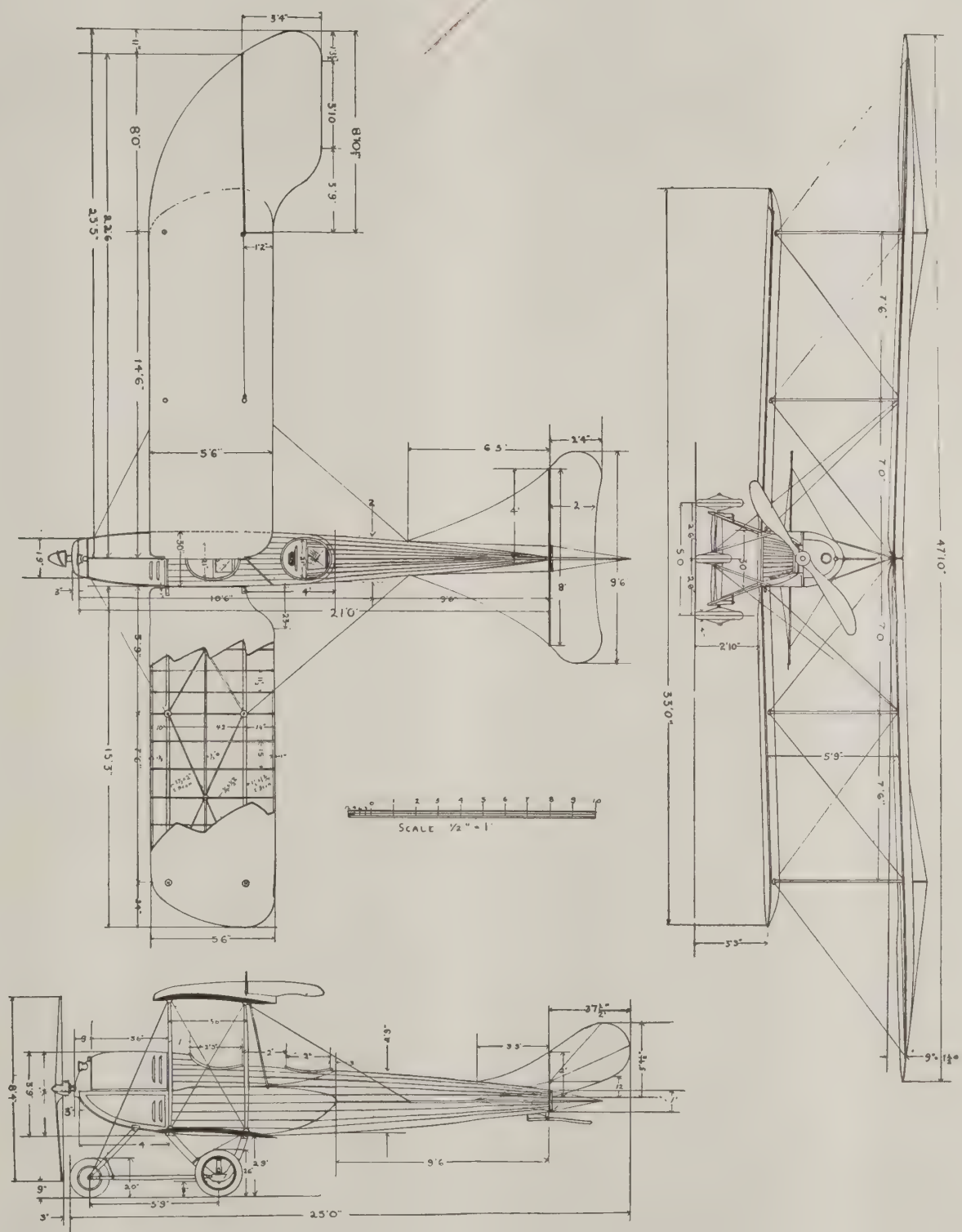
Gliding Angle: One-to-ten. (Estimated).

Useful Load: 750 pounds.

Weight of Machine: Light, 1,350. Load

Load per square foot of surface: 5.8 pounds.

Scale Drawing of the Christofferson Tractor Biplane





# Military Aeronautics Prominent in

## Organizations Favoring Preparedness Hold a Joint Meeting at the Aero Club of America

REPRESENTATIVES from most of the leading organizations which are working for an increase in the military and naval preparedness of the United States decided at a meeting at the Aero Club of America on June 3d to unite under the leadership of a Conference Committee of Preparedness in order to avoid duplication of effort.

The meeting was held behind closed doors, but it was said afterward that speakers represented in strong language the danger to the country of attack and invasion. Some of the speakers said that they, with the rest of the country, had until recently possessed a feeling of security founded upon a confidence that this country would be immune from attack so long as it lived up to its own obligations, but that late events had convinced them that the only defense which a nation had in the world today was force.

Other speakers attacked Congress and said that it had failed to grasp the perils which existed for the country, and that the nation was facing a critical period, in which it had to look for its leaders outside of Congress.

A resolution was passed urging the establishment by Congress of a Council for National Defense, composed of eight members of Congress, three Cabinet officers, two army officers, and two naval officers.

At the meeting the National Security League was represented by S. Stanwood Menken, Herbert Barry, and J. Beaumont Spencer; the Aero Club of America by Alan R. Hawley, Henry A. Wise Wood, Robert J. Collier, John Hays Hammond, Jr., and Henry Woodhouse; the American Legion by Theodore Roosevelt, Jr., E. C. Power, and Alexander M. White; the American Society of Civil Engineers by William J. Douglas; the Navy League by Arthur Henry Dadmun, Charles A. Fowler, and Herbert L. Satterlee, and the American Red Cross by Cranston Brenton, Mr. G. Douglas Wardrop, Editor of *Aerial Age* acted as secretary of the meeting. A meeting will be held at the Aero Club on June 11 as *Aerial Age* is on the presses, to complete the organization of the central body.

### Peace and Preparedness Meeting

On June 14th and 15th, representatives of these organizations together with representatives of the Grand Army of the Republic, Sons of the Revolution, Daughters of the Revolution, Sons of Veterans, New York Peace Society, and Governors of States and Mayors of cities will meet at the Astor Hotel, New York, under the auspices of the National Security League, for a "peace and preparation conference."

This meeting is held to discuss plans for alleviating the unpreparedness of the United States and its danger from attack.

The conference will open on Monday afternoon, June 14th, at the Astor Hotel. The first day's session will be devoted to discussion of the unpreparedness of the army for emergencies of a serious nature. A mass meeting will be held in Carnegie Hall on the same evening, with Alton B. Parker as chairman.

Tuesday will be "Navy Day." There will be a discussion in the morning, a luncheon at noon and a session in the afternoon for the formulation and adoption of resolutions.

Jacob M. Dickinson and Henry L. Stimson, one-time Secretaries of War, and Charles J. Bonaparte and George von L. Meyer, formerly Secretaries of the Navy, will make addresses. Other speakers will be the Rev. Dr. Lyman Abbott, Hudson Maxim, Frederic R. Coudert and George Haven Putnam.

A feature of the conference will be a graphic exhibition of the unpreparedness of the United States. There will be views of warships of this and other nations, tables of comparison showing the weakness of the armed forces of the United States and information of all kinds which might lead to the betterment of existing conditions.

In justification of its call for the conference, the league has issued a statement which says:—

"According to official government reports there are barely thirty thousand mobile troops in the United States. These are scattered among fifty-two widely scattered posts, which would make it impossible to mobilize quickly at any given point. This small force is short of officers, ammunition and equipment. Furthermore it has no organized reserve.

"Our National Guard, with a few exceptions, is far below its paper strength in men, equipment and efficiency.

"Our coast defences are inadequate; our fortifications insufficiently manned now and without adequate organized reserves.

"Our navy is inadequately manned and has no organized reserves available in the event of war. It is not having sufficient target practice. Fast scout cruisers, battle cruisers, aeroplanes, mine layers, supply ships and transports are lacking."

The programme of the league, which will be submitted to the conference, is stated as follows:—

The National Aeroplane Subscription, started by the Aero Club of America, have been received through New York newspaper.

A Flying Boat and a course of training for both a pilot and a mechanic, for the Naval Militia of New York State, offered by the Curtiss Aeroplane Company.

A woman interested in the Movement.....\$1000.00

Edwin Gould.....500.00

Cortlandt F. Bishop.....500.00

Mortimer L. Schiff.....250.00

Alan R. Hawley.....250.00

J. G. McCoy.....250.00

Glenn H. Curtiss.....250.00

Editors and Pubs. Flying.....250.00

Editors and Pubs. Aerial Age.....250.00

J. Parke Channing.....250.00

Allan A. Ryan.....250.00

Frederick M. Bourne (N. Y. Sun).....200.00

Samuel H. Valentine.....100.00

S. R. Guggenheim.....100.00

Robert Glendinning.....100.00

Frank A. Seiberling.....100.00

George W. Turney.....100.00

Lawrence B. Sperry.....100.00

Chas. Jerome Edwards.....100.00

A. B. Lambert.....100.00

E. Meyer, Jr., (N. Y. Times).....100.00

J. S. Blackton, (N. Y. Sun).....100.00

Miss H. Ware, (N. Y. Tribune).....100.00

Harrington Emerson.....100.00

Alvin Untermyer.....50.00

F. Harrison Higgins.....50.00

Martin Beck.....50.00

Howard Huntington.....25.00

Walter H. Phipps.....25.00

F. A. R.....25.00

Isaac M. Ulman.....25.00

James Byrne.....25.00

John Dale Cooper.....25.00

Edgar M. Berliner.....25.00

Capt. Thos. S. Baldwin.....25.00

F. H. Russell.....25.00

Albert S. Heinrich.....25.00

K. M. Turner.....25.00

Bernard A. Law.....25.00

Charles F. Niles.....25.00

William H. Bliss.....25.00

Maximilian Schmitt.....25.00

"Legislation correcting present wasteful methods of military appropriations and disbursements.

"The adoption of a definite military policy.

"A stronger, better balanced navy.

"An effective mobile army.

"An adequate National Guard, organized under the War Department.

"The creation of an organized reserve for each branch of our military service."

At the first joint meeting practically all the speakers expressed their appreciation of the value of aeroplanes and the necessity of having substantial aeronautical organizations for the Army, Navy, National Guard and Naval Militia.

### The Council of National Defense

The Council of National Defense is also endorsed by the Army as is shown by the following extract from the report of the organization of the land forces:

As war is but a phase of international politics, so military policy is but a phase of international policy. In its broadest

# New National Defense Movement

ica, is developing very substantially. The following contributions  
rs and direct to the Aero Club of America

John G. Breckenridge.....	\$25.00
William F. Whitehouse.....	25.00
Capt. H. L. Willoughby.....	25.00
Robert Pluym.....	25.00
Caleb S. Bragg.....	25.00
William H. Williams.....	25.00
Joseph A. Steinmetz.....	25.00
Miss H. C. Worth.....	25.00
William E. Scripps.....	25.00
Burt M. McConnell.....	25.00
Miss K. Huntington.....	25.00
John E. Sloane.....	25.00
Herbert Pulitzer.....	25.00
William Berri.....	15.00
Harold H. Brown.....	10.00
Lt. J. E. Carberry, U. S. A.....	10.00
Lt. F. Dortch, U. S. N.....	10.00
Lt. F. P. Lahm, U. S. A.....	10.00
Howard A. Scholle.....	10.00
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Arthur Veel Rose.....	10.00
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Frank S. Lahm.....	10.00
W. W. Strong, (N. Y. Sun).....	10.00
Chas. H. Dorr, (N. Y. Sun).....	10.00
Dr. H. Welland, (N. Y. Tribune).....	10.00
Lt. J. H. Towers, U. S. N.....	10.00
William S. McNutt.....	10.00
M. C. D., (N. Y. Times).....	5.00
F. V. Schley, (N. Y. Sun).....	5.00
J. J. Wardrop, (N. Y. Sun).....	5.00
H. P. Marshall, (N. Y. Sun).....	5.00
E. A. Davenel, (N. Y. Tribune).....	5.00
H. Hone, (N. Y. Tribune).....	5.00
H. Aulich, (N. Y. Tribune).....	5.00
K. Cosgrave, (N. Y. Tribune).....	2.00
M. D., (N. Y. Sun).....	2.00
E. Kingsell, (N. Y. Times).....	1.00

sense the organization of the land forces is but a part of the national war organization, which includes the organization of the sea forces and of all other national resources.

A scientific solution of our military problem must include a determination and definition of national policy, and the provision of sufficient military and naval forces to support that policy against such adverse interest as may develop from time to time. As several departments of the Government are concerned in the settlement of this question, it is obvious that a sound policy must be predicated upon a comprehensive view of the whole problem with the view of co-ordinating and balancing its several elements.

In order to formulate a comprehensive policy for the consideration of Congress, it is believed that there should be a council of national defense similar to the one proposed in H. R. 1309. The function of this council, as defined in the bill, is to "report to the President, for transmission to Congress, a general policy of national defense and such recommendation of measures relating thereto as it shall deem necessary and expedient."

The members of the council, as provided in the bill, are as follows:

The President of the United States (ex officio president of the council).

The Secretary of State (to preside in the absence of the President).

The Secretary of War.

The Secretary of the Navy.

The chairman of the Committee on Appropriations of the Senate.

The chairman of the Committee on Foreign Affairs of the Senate.

The chairman of the Committee on Military Affairs of the Senate.

The chairman of the Committee on Naval Affairs of the Senate.

The chairman of the Committee on Appropriations of the House of Representatives.

The chairman of the Committee on Foreign Affairs of the House of Representatives.

The chairman of the Committee on Military Affairs of the House of Representatives.

The chairman of the Committee on Naval Affairs of the House of Representatives.

The Chief of the General Staff of the Army.

An officer of the Navy not below the rank of captain, to be selected by the Secretary of the Navy.

The president of the Army War College.

The president of the Navy War College.

It would seem that through the agency of this council the problem of national defense should receive the joint consideration of all of the branches of the Government which are responsible for its ultimate solution.

## Flying Boat Presented by Curtiss Aeroplane Co. to Go to First Battalion N. Y. Naval Militia

THE flying boat presented, through the Aero Club of America, to the Naval Militia of New York State, by the Curtiss Aeroplane Company, of Buffalo, is to be assigned to the First Battalion, which has its headquarters on the U. S. S. GRANITE STATE, at the foot of West Ninety-seventh Street, New York City.

Commodore R. P. Forshaw, head of the Naval Militia of New York State, has advised the Aero Club of America to this effect, and Commander Charles L. Poor, of the first Battalion, is now selecting candidates for the course of training to be given both a pilot and a mechanic at either Buffalo or Hammondsport, New York.

When the men have been properly trained, a new flying boat, of the type supplied to the navies of different countries by the Curtiss Company, will be delivered to the Naval Militia of New York State.

Secretary of the Navy Daniels, in a letter to Mr. Alan R. Hawley, President of the Aero Club of America, expresses his appreciation of the value of the National Aeroplane Subscription as follows:

My dear Mr. Hawley:

Your letter of the 18th ultimo, in regard to a public subscription for aeronautical purposes, was duly received.

I am greatly interested in anything that is being done to assist in the development of aeronautics in this country. I congratulate the Governors of the Aero Club of America on the public spirit which has prompted them to start a public subscription to raise funds to further develop aeronautics in this country.

As you undoubtedly know, I am not allowed legally to consider public subscriptions for the Government's use. It would seem, though, that you could be of great assistance to the Naval Militia at the present time by obtaining aeroplanes for them by popular subscriptions.

If you will apply to Captain Bristol, he will be very glad to assist you in any way that is possible so far as he properly can. By thus conferring with him, you will be able to work, as you have suggested, in harmony with the United States Navy.

Your idea of creating a valuable and efficient aeronautical reserve is an excellent one, and I am sure that you will meet with that measure of success that your efforts deserve.

I desire to thank you and the Governors of the Aero Club of America, so far as the Navy Department is concerned, for the interest taken in this subject.

Sincerely yours,

(Signed)

Josephus Daniels.

Secretary of the Navy.



## Automobile Clubs Co-operating with the Aero Clubs in Developing the Movement to Popularize Aviation—(Continued from page 232)

### New York—Continued

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Club, Ithaca, N. Y.; M. B. Kent, Pres., A. C. of Jamestown, Jamestown, N. Y.; F. M. Curtiss, Secy., A. C. of Jamestown, Jamestown, N. Y.; Frank A. Empsall, Pres., Jefferson Co. A. C., Watertown, N. Y.; Jesse C. Ayers, Secy. & Treas., Jefferson Co. A. C., Watertown, N. Y.; L. M. Pulver, Pres., Lake Luzerne Auto. Club, Luzerne, N. Y.; D. P. Strang, Secy., Lake Luzerne Auto. Club, Luzerne, N. Y.; James Shea, Pres., Lake Placid Auto. Club, Lake Placid, N. Y.; W. L. West, Secy., Lake Placid Auto. Club, Lake Placid, N. Y.; John Crowley, Pres., Little Falls Auto. Club, Little Falls, N. Y.; Guy L. Kretser, Secy., Little Falls Auto. Club, Little Falls, N. Y.; J. S. Frazee, Pres., Long Island Auto. Club, Brooklyn, N. Y.; P. M. Brotherhood, Secy., Long Island Auto. Club, Pros. Pk. Plaza, Brooklyn, N. Y.; L. C. Sutton, Secy., Massena Auto. Club, Massena, N. Y.; F. J. Whipple, Pres., Medina Auto. Club, Medina, N. Y.; H. W. Robbins, Secy., Medina Auto. Club, Medina, N. Y.; J. L. 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Y.; Dr. W. D. Gamble, Secy., Wayland Auto. Club, Wayland, N. Y.; Thos. O'Connor, Secy., Wellsville Auto. Club, Wellsville, N. Y.; C. C. Heseltin, Secy., Whitesville Auto. Club,

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### [North]Dakota

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### Ohio

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(To Be Continued Next Week)



### Installation of the Sperry Stabilizer on a Curtiss Flying-Boat

- \*A. Gyroscopic Unit, consisting of four gyroscopes, which remains in a horizontal plane at all times.
- B. Air Compass.
- \*C. Universal Hand Control Lever.
- D. Telescopic Drift Indicator.
- E. Search Light.
- \*F. Anemometer.
- \*G. Servo Motor, from which is obtained the necessary power to operate the controls.
- \*H. Hand Cut Out Switch, which disconnects the automatic stabilizer when desired.

The letters preceded by \* are units of the stabilizer apparatus. Two other units, completing the stabilizer set, the generator, which is mounted on the aeroplane engine, and the storage battery, behind the seat, are not shown. In this picture the cover of the gyroscopic unit are the spray hood of the flying boat have been removed.



## Lubricating System of the Belgian F. N. Motors

It has been found that aviation motors and racing car motors, which are usually operated at full power when operated at all, often show a falling off in power and reliability after running for several hours, and this result has naturally been ascribed to the oiling system where it could not be charged to insufficient cooling, as these two factors are the only ones in which the elapsed time has an accumulative function which might affect the running and the power.

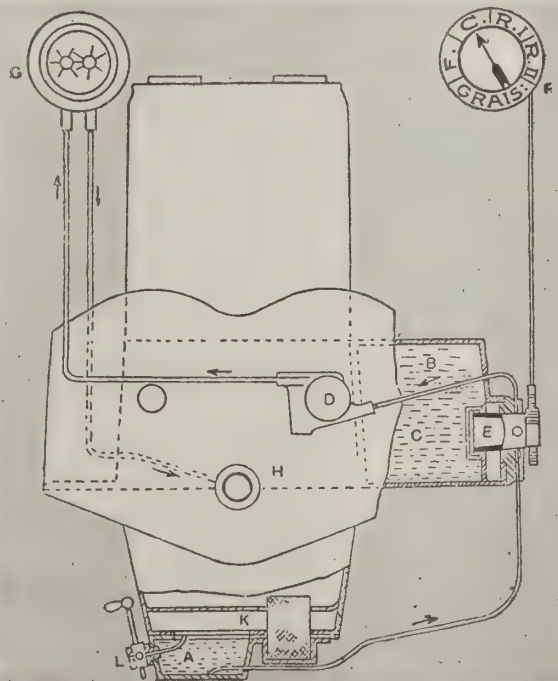
In a few German aviation motors improved reliability has been secured, it is reported, by a scant oil feed from a separate tank and pump to the cylinders, with the very small surplus returned to another small special tank, and a circulation system, with filter, for the oil fed to the crank-shaft, camshaft and camgear bearings. This arrangement is based on the theory that the oil sent to the cylinders and not consumed undergoes certain subtle changes by being subjected to very high temperatures which reduce its value materially for lubricating heated bearing surfaces again. On the same theory there is now mentioned the method, for automobiles, of allowing no return of cylinder oil to the supply from which the motor is fed and of leading the surplus, instead, to a reservoir from which it may trickle to the gearbox, the differential, the universal joints contributing to keeping these parts supplied to some extent even if they are neglected otherwise.

Certain improvements of the lubricating system which are noticed in F. N. motors are not of this radical nature involving a theory on the chemistry of the oil, but intended above all to obviate damage from carelessness in keeping the oil supply sufficient. From the accompanying diagrammatic sketch the general arrangement can be readily understood, and the mechanical details do not seem to be important. One of them is quite clever, however, consisting in having a small gear, driven visibly by the oil flow in the sight glass G to indicate that the feed is regular. The action is probably shown more plainly in this manner than by any of the sight methods in general use.

The oil sump A is in the lowest portion of the crankcase, as usual, but is supplemented by a tank of twice its capacity divided in two compartments B and C, and these not only take the place of a separate oil supply but can be brought into service for the feed when needed, and, even if a thick oil is used in winter, their contents will usually be in condition for immediate use, as the tank is mounted under the motor hood. The oil pump is conveniently located at D and is driven from the camgear in the usual manner. A valve E is controlled from the dash by the lever F, the different positions and effects of which are indicated by a dial. When it points to C on the dia

the oil in sump A flows through the main channel of valve E, from here through the measuring and sight device G to the crankshaft and other bearings, with the surplus draining back to the sump through filter K. If the oil supply in A gives out, the gear in G ceases to rotate, and this is soon noticed. If lever F is then moved to R-1 the oil in compartment B is admitted to the circulation. Eventual failure of this supply is again indicated in the sight device. Lever F can then be returned to position C, as meanwhile the surplus oil feed has accumulated in A. When this is exhausted lever F can be turned to R-2, and compartment C then comes into action.

If the motor smokes, the lever F can be placed in position F which throttles any feed that is in action. The height of the oil in A can be told by the cock L; if oil flows from it when it is opened, F should be placed at C to reduce the level.—From *Auto-Technik*, December 12.







# Foreign News

Edited by L. d'Orcy



## France

The official statement issued by the War Office on June 3 gives the following account regarding the activity of the French air fleets:

"Twenty-nine French aeroplanes between 4 and 5 o'clock this morning bombarded the headquarters of the Imperial Crown Prince. They dropped 178 shells, many of which reached the mark, and several thousand darts.

"All the machines were subjected to a severe cannonade, but they all returned unscathed."

## Germany

A despatch from Friedrichshafen, on Lake Constance, says that one of the Zeppelin airships which on May 26 made a raid on the town of Southend, at the mouth of the Thames, forty miles east of London, was struck by one of the British shells fired at it. Owing to the resultant loss of gas it was unable to reach the mainland, and it fell into the sea off Heligoland. Whether the crew was saved is unknown.

Orders have been received at Friedrichshafen to replace the loss of this vessel with a Zeppelin of the newest type. Such an airship, recently completed, will leave Friedrichshafen shortly.

## Great Britain

The long threatened Zeppelin raid on London has at last materialized on May 31. Details of the attack are lacking on account of the British government withholding all news concerning aircraft raids and their supposed course, but it is known that several German airships participated in the raid during which ninety bombs were dropped causing the death of four people and injuring a score.

The German official account is equally uncommunicative about this raid. It says:

"As a reprisal for the bombardment of the open town of Ludwigshafen, we threw numerous bombs last night on wharves and docks of London."

Some light is thrown on the aerial forces that carried out this raid by a report from a Belgian source. It says that German aeronauts and aviators showed unusual activity during the week preceding the raid on London.

For this purpose five Zeppelins were being got ready, each to be accompanied by three aeroplanes, just as a battleship is accompanied by destroyers. German soldiers freely stated that a big raid was planned to be carried out during the middle of the coming week.

The aviation centres in Belgium from which it was arranged the raiders should start are Gontrode and Swynaerd, near Ghent, where there are three Zeppelins and twenty aeroplanes, some of them being housed in sheds in the grounds of a large mansion; Antwerp, where there are some Zeppelins; St. Job and the aviation grounds at Etterbeke and Berchem, near Brussels. On May 26 two aeroplanes of the Allies raided the Gontrode centre and dropped bombs so successfully that forty-four Germans were killed and thirty-six injured, while the hangar was damaged.

Another Zeppelin has met his fate, this time at the hands of a Canadian military aviator, who was assisted in his work by a French comrade.

The Admiralty statement says:

"At 3 A. M. on June 7, Flight Sub-Lieutenant R. A. J. Warneford, R. N., attacked a Zeppelin in the air between Ghent and Brussels. At 6,000 feet he dropped six bombs, and the airship exploded, fell to the ground and burned for a considerable time.

"The force of the explosion caused the Morane monoplane to turn upside

down. The pilot succeeded in righting the machine, but had to make a forced landing in the enemy's country. However, he was able to restart his machine and returned safely to the aerodrome."

A despatch to the *London Daily News* describes the aerial combat as follows:

"Scarcely had gray dawn crept over the town than the noise of an airship's motor was heard as she returned from a scouting expedition that boded no good for the south coast of England. She had formed one of the fleet that recently paid a visit to London and the crew had been cruising about the north of Belgium, training for future night visits to English shores.

"A few inhabitants who were awake peering from their bedrooms soon descried in the sky two aeroplanes, coming up like hornets to attack the giant dirigible which, being unable to descend quickly enough to reach the shelter of her shed, had for the first time in the history of war to risk a combat with aeroplanes on something like equal terms. When there was light enough for the small craft to see their foe and force her to give battle, the Zeppelin rose with the greatest speed in the hope of holding the superior position, but she was not quick enough to evade her pursuers, whose pilots, with great skill, rose higher and higher till at last they were able to use their bombs in addition to their other arms.

"The German soldiers joined in the fight, firing anti-aircraft guns at the aviators, who were at the same time subjected to a lively fire from the crew of the Zeppelin. Their skillful manoeuvring saved them, for one was able after a short flight to soar over the Zeppelin and drop bombs with such accuracy that the whole airship was suddenly seen to burst into flames.

"The Zeppelin dashed through the air a mass of flames. Every one of her eighteen compartments was set alight.

"The wreckage fell on the Grand Beguinage de St. Elisabeth, a famous nunnery at Mont St. Amand on the eastern side of Ghent.

"The aeroplanes sailed round in the vicinity to make sure that their work had been thoroughly accomplished and then made off unharmed."

## Italy

The Italian navy dirigible M-2 flew over Sebenico (Dalmatia) on May 28 and threw bombs, which hit several torpedo boat destroyers belonging to a group anchored at the mouth of the river. The dirigible was violently bombarded, but was not hit and returned undamaged.

An official statement issued by the Ministry of Marine says:

"One of our dirigibles flew over Pola on May 30, dropping bombs on the railroad station, a naphtha depot, and the arsenal. All the bombs burst with full effect. A big fire started in the arsenal.

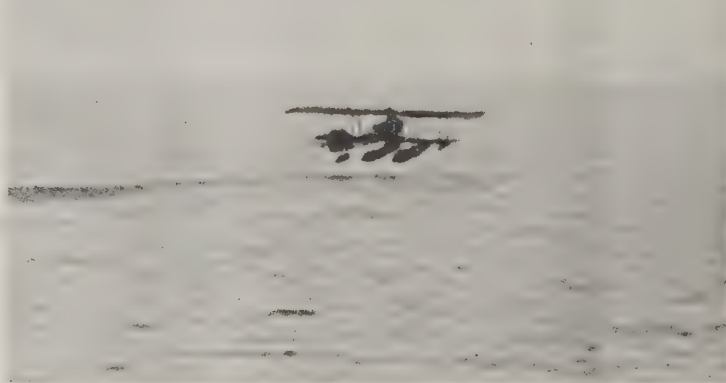
"The dirigible was subjected to a violent fire from the land batteries, but was not hit and returned intact."

Exultation is general in Rome over this raid and the amount of damage done, as Pola is the greatest military port of Austria, is the centre of the railways of Austria, and has great natural defenses and fortifications. The fact that an Italian airship was able to damage the arsenal, the railway station and other structures is taken as proof that the Austrian fleet, now at that port, is not entirely safe.

It has been ascertained by the state railway authorities at Ancona that the bombardment of the Marecchia railway bridge near Rimini on May 24 was due, not as first supposed to the Austrian warships, but to an enemy dirigible flying the Italian flag and with the name "City of Ferrara" painted in huge letters on its sides.

(The *Citta di Ferrara* is an Italian army dirigible of 12,100 cubic meters and 500 h.p.; it was built in 1912 at the Italian government airship yards of Vigna di Valle).

***A British Seaplane Going Aloft for a Reconnaissance Flight at the Dardanelles. The British and French Seaplane Squadrons Have Proven Indispensable at the Dardanelles Where They Alone Are Able to Detect Submerged Mines, Submarines and Concealed Land Batteries.***





# MODEL NEWS

Edited by WALTER H. PHIPPS



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### Why Scale Models Are Not Successful Flyers

By Walter H. Phipps

So many beginners in taking up model work begin by constructing scale models of large machines only to be disappointed when they do not fly, that a word of explanation of the causes of these failures will not be amiss.

Those of us who can look back four or five years to the early days of model flying in America will recollect how, following the successful demonstration of the aeroplane, the craze for model flying set in and immediately the market became flooded with dozens of so-called scale flying models; how literally thousands of young men and boys throughout the country started in constructing scale models which were supposed to duplicate the feats of the full sized machines in miniature but which in reality never did or ever could make real flights for the reasons explained herein, which are known to every model flyer of experience.

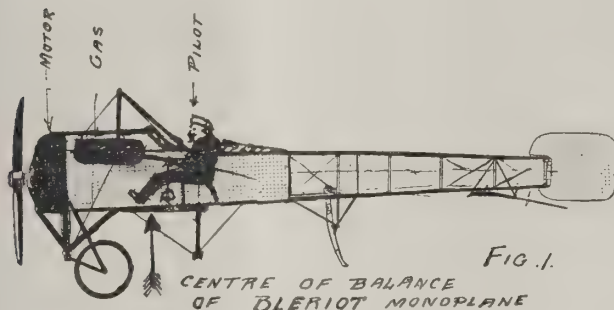


FIG. 1.

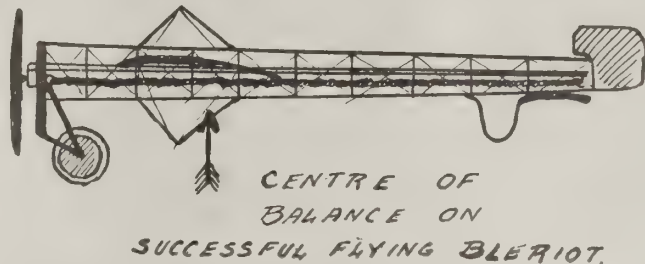


FIG. 2.

By this it is not meant that models cannot be constructed incorporating designs which are perfectly practical of development into full sized machines, but rather that owing to the difference in the distribution of the weight of the rubber motor in a model and a gasoline engine in a full sized machine, this naturally throws the relation of the balance out, thus making it a physical impossibility to make a strictly scale model of an elevator in the rear type fly successfully. This is especially noticeable in scale Blériot models and other similar types where the weight of the rubber motor is carried way back to the tail, regardless of the fact that this arrangement brings the centre of gravity of the model almost on the tail whereas in the full sized Blériot the centre of gravity is way up in front. This difference in the weight distribution and balance between the model and the large machine I have endeavored to show in Figs. 1 and 2 from which it may readily be seen how absurd it is to expect the model to have the same flying balance as the full sized machine. It is chiefly due to a lack of understanding of this difference in balance between the model and the full sized machine that so many model experimenters experience failures and become discouraged—where if they will begin by constructing simpler models and learning the feel and balance of their craft they would soon learn that, as in the case of large machines, it is in the perfect balance of their machines, that the success of their flights lie.

By conducting a series of experiments with a simple front elevator model and shifting the main plane back and forth they will soon find that for each change made in the position of the main plane there is a consequent change in the action of the machines. By studying these actions and noticing how the control of the model may be varied they will soon learn how if the model is tail heavy, shifting the main plane back will correct this, while if the model is nose heavy, shifting the plane forward will rectify this.

If these simple experiments are tried with a tractor or front propeller model patterned after a large machine, it will be found that the main plane has to be placed much further back on the model than is the case on the large machine, this being due of course to the fact that the centre of gravity of the model is so far back, as already explained and illustrated in Figs. 1 and 2. Since the main planes on a large tractor are seldom placed as far back as on the model it will therefore readily be seen that the model to be a successful flyer cannot be strictly a scale copy of a large machine, but must embody the necessary changes in the position of the main planes to make up for the different distribution in weights. This does not, however, rob the model of its usefulness as an aid in



the development of full sized machines for in evolving a full sized machine from the model it is only necessary to take into account the differences in the weight distribution and re-balance accordingly.

If more full sized constructors realized the value of model development work, we would have more such developments as the Etrich, the Dunne, and the Weiss machines and far greater progress could be made.

### The Aero Science Club

By G. A. Cavanagh

At the meeting of June 5th, a working plan of the Club's new machine was submitted by Walter H. Phipps which plan was considered satisfactory. Mr. Phipps suggested that the wings which were donated to the club be discarded as their construction makes them unsuitable for use in connection with the type of machine desired. It was decided to build new wings entirely.

A motor can be obtained as soon as the machine is complete. At Saturday's meeting it was decided to issue a bulletin of the official model records recognized by the Club. The records that have been recognized by the A. S. C. will appear in subsequent bulletins.

All members who desire to enter the Efficiency Contest to be held on July Fourth should address the Secretary, No. 29 West 39th St., N. Y. City.

Members desiring club pins can secure same within two weeks.

### Curiosity

By Harry Schultz

At a model contest one fine day, a youth stood idly by,  
And watched the model aeroplanes that fluttered in the sky,  
A curious old lady was standing by his side  
And in a voice so loud and shrill these words to him she cried:

"What do they mean by 'camber'?"  
What is it called the 'plane'?"  
And when them things fly far away  
Do they fly back again?  
Oh, see that one has landed  
Upon the railroad track,  
The train is fast approaching  
And that boy won't get it back,  
And now, young man, please tell me,  
One thing more I'd like to know,  
What do they make them things for?  
And what is it makes them go?"

The questions the youth answered with stoical good grace,  
The lady seemed quite happy for a smile was on her face,  
The youth was also happy for he thought that she was through,  
But he found his joy was short lived, for she started in anew:

"What do they mean by 'fuselage'?"  
What is it called the 'chord'?"  
The one that just flew over there  
Was run down by a Ford.  
What's that thing he is turning?  
An egg-beater, I declare,  
Ain't it wonderful to see them things,  
Go flying through the air?  
And now, young man, please tell me,  
One thing more I'd like to know,  
Do they make them up all by themselves?  
And what is it makes them go?"

At a far-off institution in this happy land of ours,  
Outside the birds are singing, butterflies play 'round the flowers,  
A padded cell contains a youth whose memory's gone away,  
And as the keepers listen these words they hear him say:

"What do they mean by 'camber'?"  
Etc.





Aeronitis is a pleasant, a decidedly infectious ailment, which makes its victims "flighty," mentally and physically. At times it has a pathologic, at times merely a psychologic foundation. It already has affected thousands; it will get the rest of the world in time. Its symptoms vary in each case and each victim has a different story to tell. When you finish this column **you** may be infected, and may have a story all of your own. If so, your contribution will be welcomed by your fellow **aeronuts**. Initials of contributor will be printed when requested.

An Austrian aviator flew over the Rumanian city of Turnu-Severin, dropping a bouquet of lilies with the inscription: "The Austrian flying corps salutes the Mayor and ladies of the town," according to despatches received here.—*Bucharest Despatch*.

A very pretty incident, but why in the name of gallantry was the Mayor of Turnu-Severin included? Does he happen to be of the gentler sex?—*New York Sun*.

P. P. Belt, the aviator, made another successful ascension with his biplane last Sunday afternoon at Magnolia meadow. He didn't attempt to get very high but he went round and around and had perfect control of his ship at all times. When Mr. Belt feels sure that the machine will do his bidding and not attempt any funny work of its own accord he will soar to the azure regions and frolic with the swallows.

Harry, son of Charles the miller, has almost completed the work on an aeroplane which he has stored in the old cornstarch building. It is twenty-five feet in width and is a model for neat workmanship. Young Miller did not have any special plans from which to work, following his own ideas entirely. He will test it out by making a descent from some high hill and if it proves satisfactory will install an engine.

Do you hope or fear or worry; are you looking for something in life? Get yourself a 'plane. It fulfills hopes, allays fears, chases worry, and shows you the bright spots on the face of the earth.



"Pardon me, Miss, but I'm going to make a complaint about the length of your hat-pins."—*N. Y. WORLD*.

Did you want the emperorship of China? Get yourself a 'plane:—then you'll see that China is not the only troublesome spot on earth; and you won't want the emperorship anyway; the 'plane takes you higher than the throne.

Do you feel like Atlas—as if you were bearing the world on your shoulders? Get yourself a 'plane:—then you'll see that the world rolls on quite well without you. And you won't need to worry over running it; and you'll be a much happier man.

Has that gilded stock failed to rise? Get yourself a 'plane: then you'll see that gilded stock is not the only promoter of happiness. The 'plane will give you in the present tense the amount of glad-to-be-alive feeling which the rise was to buy for you in the future tense. And you won't worry over that musty stock.

Has Providence failed to move that mountain that stands between you and your goal? Get yourself a 'plane:—then you'll see that, no matter how high the mountain, there is a way around it and over it. And you'll fly over the obstacles to your goal.

Has the girl of your dream popped the question? Get yourself an aeroplane—and take the girl along. There's happiness in having some one to share your joys and troubles. And she can help you to run the 'plane and make life seem an everlasting joy-ride.

*No matter what happens—get yourself a 'plane!*

One of our most consistent admirers is an old anti-bellum negro, William, who is known locally as a "character." William likes to explain all the details of flying with actual volubility and assumed wisdom. Quite recently, an over-dressed woman of pompous and dominating mien came to look the flying boat over accompanied by a rather pretty but timid girl, evidently her daughter. After inspecting the boat and subjecting our humble self to an insolent scrutiny the woman addressed William with Southern familiarity as follows:

"William do you think it is safe to trust Elsie to go for a flight with this aviator?"

"Yas,—siree,—marm,—," replied the old negro, "Marse Beech, done hab bofe hands accipied on dem levers all de time."

#### When the Jitney Bug Grows Wings

Now that the "jitney" seems to have come to stay, we may look forward to the time when the jitney bug grows wings. Then conditions will be more or less as illustrated in the head cut of this department. Everything will take to the air.

Under the title "The Jitney" the following rhyme appears in the Goodyear Tire News (Canadian Division of The Goodyear Tire & Rubber Company) which illustrates the popularity of these vehicles, and gives an idea of what we may expect:

"The festive jitney gaily glides providing cut-rate auto rides and cheats the undertakers; while folks throw out their liver pills and dope for other bad-air ills and break the cure-all fakers. For air at thirty miles an hour forced in our lungs by engine-power beats all the blamed physicians, good ozone plus a jitney bus may make the railway magnates cuss but heals our dispositions. The family dons their opera wraps, disdains to hang on street car straps and signals for a motor, when mother goes to do her shopping street cars pass her without stopping; jitney drivers tote her. The kiddies visit movies now piled in some wheezy motor scow, their hearts aglow with pleasure, while father lights a big cigar, steps in a passing jitney car and goes to lunch at leisure. The funny papers turn their wit upon the pleasure-giving jit, to help fill up a 'colyum'; but jokesters write their funny rhymes and still dig up their unspent dimes to swell the jitney's volume. The traffic cop whose stately arm once shielded passing folks from harm is driven nearly frantic and wishes with a sultry oath that jitney cars and drivers both were deep in the Atlantic. Directors of street railway lines advise the use of heavy fines and gasp in consternation when Mr. Common People seems quite satisfied with gas machines for rapid transportation. 'The World do Move' a poet said, the world has moved, the poet's dead, but let's not be surprised, if coming back when Gabriel blows, we find the world's wiped out its woes by being jitneyized."



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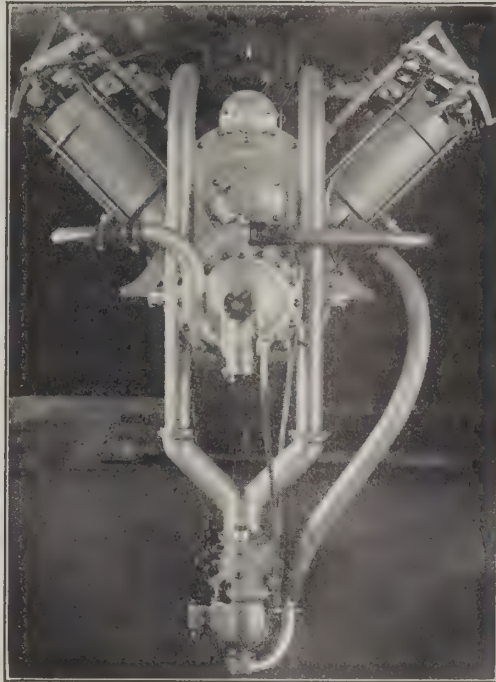
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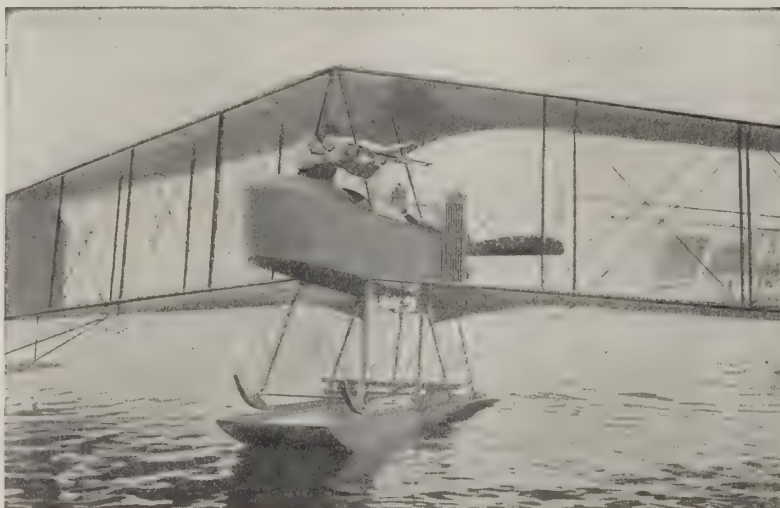
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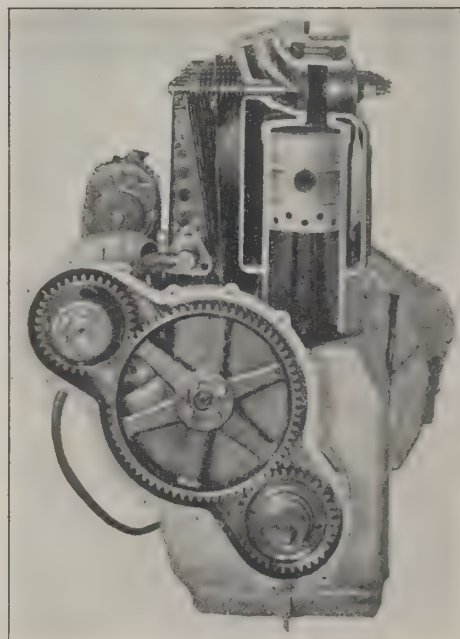
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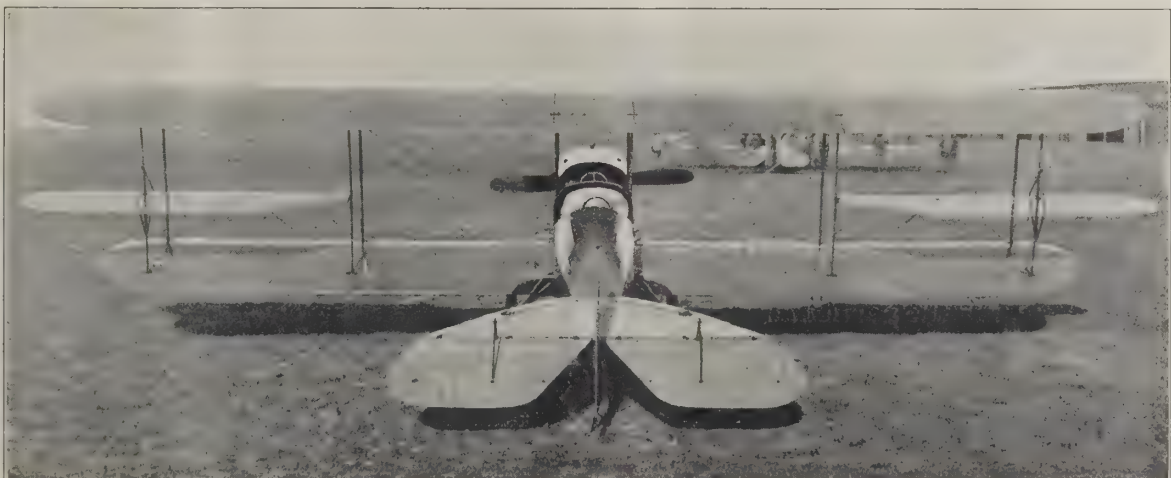
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PUBLISHED WEEKLY BY THE AERIAL AGE COMPANY, Inc., 116 West 32nd Street, New York City

Entered as Second-Class Matter March 25, 1915, at the Post Office at New York, N. Y., under the Act of March 3, 1879

VOL. I.

NEW YORK, June 21, 1915

No. 14

## Nation-Wide Movement to Provide Adequate National Defense

IN the last number of *Aerial Age* we told of the growing sentiment for adequate national defense. The developments of the past week show an extraordinary spread of this sentiment. While lack of space precludes our giving more than the phase connected more or less directly with the aeronautical movement, there is sufficient in that phase to show the tremendous proportions reached by this sentiment.

The Conference Committee on National Preparedness, composed of the representatives of twelve organizations and institutions interested in the increase of military and naval preparedness, was formed at a meeting held behind closed doors at the Aero Club of America, 297 Madison Avenue, on June 11th.

The organizations participating and representatives appointed by each representing them in the Union were as follows:

Navy League: A. H. Dadaun and C. A. Fowler.

National Security League: S. Stanwood Menken and Herbert Barry.

Army League: To be appointed.

Automobile Club of America: Henry Sanderson and Horace E. Andrews.

Aero Club of America: Henry A. Wise Wood and Henry Woodhouse.

Red Cross: Hon. Henry L. Stimson and Cranston Brenton.

American Legion: Alexander M. White and E. Ormonde Power.

American Institute of Engineers: Wm. Barclay Parsons and W. C. Douglas.

The following organizations which have also signified their desire to be represented on this Conference Committee of National Preparedness but had not yet appointed their representatives:

American Society of Civil Engineers.

American Society of Mining Engineers.

American Society of Electrical Engineers.

Institute of Radio Engineers.

Ways and means were discussed by which those organizations could better educate public opinion on this subject of military and naval preparedness and encourage the active participation of individual citizens and organizations in such ways as their qualifications permit.

The following officers were appointed: Chairman, Henry A. Wise Wood; Vice-Chairman, Alexander M. White; Secretary, Dr. John E. Hausmann.

At the conclusion of the meeting the following resolutions were adopted to be submitted to President Wilson:

*Resolved—That the chairman acquaint the President of the United States with the organization of the Conference Committee of National Preparedness composed of representatives of the following organizations: Navy League, National Security League, Army League, Automobile Club of America, Aero Club of America, American Red Cross Society, American Legion and American Institute of Engineers, and*

*It is further resolved that the chairman express to the president the earnest desire of this committee and of these organizations to co-operate with their respective spheres in furthering any plans of the administration for strengthening and perfecting the national defense in any respect in which the President believes this co-operation may be made effective.*

## The Navy League's Meeting

The Navy League started its campaign for an American Navy second to none other in the world on July 10th, at a luncheon in the Recess Club, 60 Broadway. It was attended by more than 100 well-known citizens. As a result of the discussion which followed the luncheon more than \$17,500 was subscribed to be used for the league's propaganda.

Those at the luncheon included Charles Steele, L. K. Wilmerding, Dock Commissioner R. A. C. Smith, J. F. Brady, F. A. Schermerhorn, James Speyer, W. A. Tucker, Elbert H. Gary, Theodore P. Shonts, J. C. White, Frederic R. Coudert, George T. Wilson, Ogden Mills Reid, J. P. Grace, George F. Baker, Jr., Colgate Hoyt, William Guggenheim, Allan A. Ryan, Supreme Court Justice Clarence J. Shearn, Ralph B. Strassburger, J. Stevens Ulmann, William Jay Schieffelin, S. H. P. Pell, Malcolm D. Whitman, Perry Belmont, Harry Payne Whitney, Robert J. Collier, Herbert L. Satterlee, Stewart Prosser, Mortimer L. Schiff, Colonel Charles A. Fowler, W. C. Rieck, and James L. Kelly, Charles A. Munn, Eugene Meyer, Jr. All of these gentlemen are members of the Aero Club of America.

"I want to say," said Colonel Robert M. Thompson, Chairman of the Executive Committee, who presided, "that the Navy League of the United States is the best peace society in this country to-day. It never has been, and never will be, partisan. It is essentially a national organization, and if we thought the navy would ever be used for a war of aggression we would not lift a finger to help it."

## The National Security League's Meeting

The following abbreviated account from the *New York Times* of the first of the National Security League's sessions on June 14th is significant:

## Use Belgium's Fate As Warning to U. S.

An audience composed of nearly as many women as men sat for four hours in Carnegie Hall last night and applauded enthusiastically the arguments of Alton B. Parker, Dr. Lyman Abbott, Henry L. Stimson, ex-Secretary of War; Charles J. Bonaparte, ex-Attorney General, and Jacob M. Dickinson, ex-Secretary of War, advocating immediate increases in the army and navy as the best safeguard against war. The meeting was held under the auspices of the National Security League as part of its two-day peace and preparation conference.

## Hold Up Belgium as a Warning

Ex-Judge Parker, who was Chairman of the meeting, struck the keynote of the evening, when he said:

"We want to arouse the people of the United States from the Atlantic to the Pacific, to the end that they shall let Congress know that they have made up their minds to spend a little of that \$187,000,000,000 of which we boast in order that our wives and our children and our grandchildren shall not be visited with the calamity which has befallen Belgium."

The fate of Belgium was held up by other speakers as an object lesson for the United States.

S. Stanwood Menken, President of the league, who opened the meeting, said the object was to enlighten the people of the country as to the actual conditions with regard to unpreparedness.

"We believe," he said, "that when the people realize what the true conditions are they will see to it that we are prepared and that preparation for us will mean peace."

There were several allusions to Secretary Bryan during the evening, and always the crowd greeted them with jeers and laughter. On one occasion Dr. Abbott referred to "a distinguished statesman" who wanted the President to warn American citizens against traveling on steamers bound for the German war zone.

"Oh," he said, "it is hard sometimes to keep one's patience," and the audience applauded.

Later when Mr. Stimson quoted from President Wilson's note to Germany, the very mention of the President's name brought forth a long round of handclapping.

Mr. Stimson took the position that this country's chief danger from war was due to the fact that it had "so acted in the past as to give good reason for believing that we do not really mean to protect our rights."



Mr. Bonaparte ridiculed the idea that the Atlantic Ocean afforded this country any real protection in case of invasion.

"Even if the French Army had been no larger last August than our regular army is to-day," he declared, "still the Germans would have needed twice as much time to march a hundred thousand men into Paris as they would need to put the same force in Washington or New York had they command of the sea."

#### Suggests Inferior Equipment

The exhibition was planned to suggest the inferior war equipment of the army and navy as compared with those of other countries. One placard showing a United States six-inch field gun being wheeled into action was labeled "Under fire for six miles before we can get within range." A fourteen-inch field piece of "the enemy" was dropping shells all about. A diagram showed the cities of the Atlantic Coast, every one of which was said to be "within easy range of an aeroplane released from an enemy ship."

A three-inch field piece, with its high-wheeled caisson, was the largest gun in the show. Of these the United States is said to possess only 634, with 226 others under consideration. The exhibit also included an army aeroplane, machine gun, field hospital, and ambulance equipment, signal devices, and much other equipment for actual service. On the walls were placards calling for an army of 550,000 men and an appropriation of \$157,000,000 for military purposes. The militiamen and regulars in charge were prepared to explain how the equipment compared with that of other countries.

While the public flocked to the exhibition, the delegates gathered in the ballroom on the eighth floor and were called to order by President S. Stanwood Menken, who explained that the object of the two-day convention was to arouse the people to the need of preparedness. Colonel Charles C. Lydecker, N. G., N. Y., who acted as chairman, introduced Controller Prendergast, who welcomed the delegates on behalf of the city.

The afternoon meeting was devoted to the needs of the army, and the speakers were Major George Haven Putnam, Captain Matthew E. Hanna, U. S. A., retired; Hudson Maxim and Congressman R. Wayne Parker of New Jersey.

Major Putnam said that the pacifist doctrine of letting untrained men and boys stand up against regular troops "meant wholesale murder," and that it was an "act of contributory negligence" to leave the coast cities unprotected. He favored a two-year enlistment for regular army men and a three-year reserve system and many more officers.

Congressman Parker advocated the training and arming of men rather than the building of more dreadnoughts and stronger coast forts. Increasing armaments was a waste of money, he said, unless "we have the brains and the tools to use them."

#### Roosevelt on "Professional Pacifists"

Mr. Maxim in his speech read the following letter from Colonel Roosevelt:

My Dear Mr. Maxim:

I thank you heartily for your book on "Defenseless America." It is a capital book and I believe it is safe to say that no wise and patriotic American can fail to recognize the service that you have rendered in writing it. I hope it will have the widest possible circulation throughout our country.

I was glad to see the first-class letters that have been written you by such good Americans as Oscar Straus, Garrett P. Serviss, Rear Admiral W. W. Kimball, C. P. Gray, Holman Day and the others. On the other hand, I was saddened by the extraordinary letter sent you by the three young men who purported to speak for the senior class of the college of which they are members. The course of conduct which these men and those like them advocate for the nation would, of course, not only mean a peculiar craven avoidance of national duty by our people at this time, but would also inevitably tend permanently to encourage the spirit of individual cowardice no less than of national cowardice.

The professional pacifists, the professional peace-at-any-price men, who during the last five years have been so active, who have pushed the mischievous all-arbitration treaties at Washington, who have condoned our criminal inactivity as regards Mexico and above all as regards the questions raised by the great world war now raging, and who have applauded our abject failure to live up to the obligations imposed upon us as a signatory power of The Hague Convention, are, at best an unlovely, body of men, and taken as a whole are probably the most undesirable citizens that this country contains.

#### Peace-at-Any-Price Leagues

But it is less shocking to see such sentiments developed among old men than among young men. The college students who organize or join these peace-at-any-price leagues are engaged according to their feeble abilities, in

cultivating a standard of manhood which, if logically applied, would make them desire to "arbitrate" with any tough individual who slapped the sister or sweetheart of one of them in the face.

Well-meaning people, as we all know, sometimes advocate a course of action which is infamous; and, as was proved by the great Copperhead Party fifty years ago, there are always some brave men to be found condoning or advocating deeds of national cowardice. But the fact remains that the advocates of pacifism who have been most prominent in our country during the past five years have been preaching poltroony.

Such preaching if persevered in long enough, softens the fibre of any nation and above all of those preaching it; and if it is reduced to practice it is ruinous to national character. These men have been doing their best to make us the China of the Occident, and the college students, such as those of whom you speak, have already reached a level considerably below that to which the higher type of Chinaman has now struggled on his upward path.

On the whole, for the nation as for the individual, the most contemptible of all sins is the sin of cowardice; and while there are other sins as base; there are none baser. The prime duty for this nation is to prepare itself so that it can protect itself—and this is the duty that you are preaching in your admirable volume. It is only when this duty has been accomplished that we shall be able to perform the further duty of helping the cause of the world righteousness by backing the cause of the international peace of justice (the only kind of peace worth having) not merely by words but by deeds.

#### Peace Talk Untimely

A peace conference such as that which some of our countrymen propose at the moment to hold is purely noxious, until as a preliminary we put ourselves in such shape that what we say will excite the respect and not the derision of foreign nations; and, furthermore, until we have by practical action shown that we are heartily ashamed of ourselves for our craven abandonment of duty in not daring to say a word when The Hague conventions were ruthlessly violated.

Righteousness must be put before peace, and peace must be recognized as of value only when it is the hand-maiden of justice. The doctrine of national or individual neutrality between right and wrong is an ignoble doctrine, unworthy the support of any brave or honorable man. It is wicked to be neutral between right and wrong, and this statement can be successfully refuted only by men who are prepared to hold up Pontius Pilate, the arch-typical neutral of all time, as worthy of our admiration.

An ignoble peace may be the worst crime against humanity, and righteous war may represent the greatest service a nation can at a given moment render to itself and to mankind.

Our people also need to come to their senses about the manufacture and sale of arms and ammunition. Of course, the same moral law applies here between nations as between individuals within a nation. There is not the slightest difference between selling ammunition in time of war and in time of peace, because when sold in time of peace it is only sold with a view to possibility or likelihood of war. It should never be sold to people who will make bad use of it, and it should be freely sold at all times to those who will use it for a proper purpose.

#### Morality of Arms Sales

It is absolutely essential that we should have stores where citizens of a nation can buy arms and ammunition. It is a service to good citizenship to sell a revolver to an honest householder for use against burglars or to a policeman for use against "gunmen." It is an outrage against humanity knowingly to sell such a revolver to a burglar or a "gunman." The morality of the sale depends upon the purpose and the probable use. This is true among individuals. It is no less true among nations.

I am speaking of the moral right. Our legal right to sell ammunition to the Allies is, of course, perfect, just as Germany, the greatest trader in ammunition to other nations in the past, had an entire legal right to sell guns and ammunition to Turkey, for instance. But, in addition to our legal right to sell ammunition to those engaged in trying to restore Belgium to her own people, it is also our moral duty to do so, precisely as it is a moral duty to sell arms to policemen for use against 'gunmen.'

Wishing you all possible success. I am, faithfully yours,

THEODORE ROOSEVELT.

Hudson Maxim, Esq., Lansing, N. J.

The second session of the National Security League was even more successful than the first. We shall comment on it next week.



# THE NEWS OF THE WEEK

## Curtiss Aeroplane and Sperry Gyroscope Figure in National Security League Defense Exhibit

In the exhibits of the National Security League at the Astor Hotel were included William S. Luckey's Curtiss aeroplane, and a Sperry Gyroscope, mounted in a demonstration frame. In both cases men acquainted with the subject explained the use of the aeroplane and the stabilizer, which was much appreciated by the numerous visitors to the exhibition.

## Curtiss to Open School in Buffalo

Buffalo is to be made one of the leading experimental stations for aeroplanes in the United States. The Curtiss Aeroplane Company has petitioned Mayor Fuhrmann to be granted the privilege of constructing a mammoth hangar near the Yacht clubhouse, foot of Porter Avenue, Buffalo.

The Curtiss plant is running overtime building hydroaeroplanes for England, and even after the European war ceases the Curtiss people will be kept busy supplying aircraft to the United States and other countries. The plan is to erect a hangar near the foot of Porter Avenue from which demonstrators can take their water-aircrafts and take trial spins around the harbor and up Lake Erie. The harbor at the foot of Porter Avenue is ideal for hydroplaning.

## Navy Buys Thomas Seaplanes

It was announced in Washington, June 12th, that the Navy Department had placed a contract with the Thomas Brothers Aeroplane Company, Incorporated, of Ithaca, N. Y., for two tractor hydroaeroplanes. These are the latest type of tractor machines as developed by this company for water work. They are to be used to train officers and men in handling this type of machine as compared to the pusher type, which is now in use. They are also to be used to demonstrate whether or not a tractor machine is suitable for use by the navy in the open sea in rough water.

The machines are to cost \$12,000 apiece and will be delivered early in July.

## Niles Flies at Hartford

Charles F. Niles recently thrilled a big gathering by his upside down flights and loop the loop stunts in his monoplane at Charter Oak park, Hartford. The weather was perfect and the crowd which filled both stands and overflowed into the paddock down as far as the quarter mile pole was highly appreciative of the airman's work and applauded him to the echo after each successful descent. Niles looped the loop apparently with the greatest ease and seemed to have no difficulty in flipping the machine, which looked like a giant dragon fly over on its back and flying in that position.

In addition to the fancy flying Niles raced Ben Siple of Danbury, driving a 100-horsepower Palmer-Singer. Niles was an easy winner in the five circuits of the track. As he came down the stretch each time the aviator dipped low so that he was on a level with the middle of the grandstand.

## Wright News

Under the able tuition of Mr. R. M. Rinehart a large class of pupils are receiving instruction at the Wright School at Wright, Ohio. The Wright model "B" is the machine used.

The original Wright lever control has been displaced by the

new wheel control, which has elevator, warp and rudder all in the wheel and is simple and effective and not tiresome.

## Bonney Back Seeking New Aeroplanes for Mexico

General Venustiano Carranza is so well satisfied with the results attained by his aviators that he has sent their chief here to buy more aeroplanes. The general's nephew and chief pilot, Captain Alberto Salinas, and one of his assistants, W. Leonard Bonney, of New York, were passengers on board the Moro Castle, of the War line, which arrived in New York from Havana on June 6th. Captain Salinas is well-known in aviation circles, having learned to fly in the Moisant school at Garden City a few years ago, with his brother, Captain Gustavo Salinas.

The Mexican officer hopes to purchase several of the latest military tractor biplanes while in this city. His force is now equipped with Moisant monoplanes with 80-horsepower Gnome engines, but these aeroplanes are no longer built, and Gnome engines are kept in France, where they are made for army use. So the Carranza forces are following recent tendencies in European and American armies in seeking a biplane with capacity for heavy lifting of bombs or gun and ammunition.

Effective work in bomb dropping, as well as in scouting and artillery pointing, Mr. Bonney said, caused the demand for more aeroplanes by the Carranza force. With Captain Salinas and George Puflea, a German, who learned to fly in the United States, as pilots, the Moisant squadron of three monoplanes was attached to the division of General Gonzalez. Mr. Bonney went to Tampico about two months ago and until his return flew every day from sixty to one hundred and forty miles. "The enemy had no aeroplanes," he said yesterday, "and did their best to shoot us down without success. I came back one day, however, with thirteen bullet-holes in the machine. The bomb dropping proved very efficient. The enemy had two batteries of French seventy-five millimetre guns on our front. I found one of them and put it out of action with a bomb and the other one shut up for a week.

"On another occasion I flew over a troop train bringing reinforcements to Villa's men and dynamited it, wrecking the train. I did not stop to count the casualties. The fighting front was about forty miles out of Tampico. I expect to go back there in about two weeks."

## Pettirossi Loops at Brighton Beach

Silvio Pettirossi, a young Italo-Argentine aviator, who is practically unknown in this country, but who achieved great fame in South America and in Europe through his exceptional ability in flying a la Pégoud, gave his first exhibition in the United States on Saturday, June 12.

In the presence of a small but select assistance made up of members of the Aero Club of America and of some of his countrymen, Pettirossi and his mechanics assembled the machine, a looping type Deperdussin monoplane fitted with the new 60 h.p. Gnome motor (called  $\Sigma 50$ ), on the Brighton Beach race track.

At 7 p. m. the machine was ready to take the air. After a short test of the motor, which hummed perfectly, Pettirossi was strapped into the fuselage by his mechanics and literally jumped into the air after a short run of about 75 feet.

When hardly off the ground the aviator described a 45 degree turn and then the public began to realize what sort of an airman Pettirossi is. At a height of about 250 feet came the first sensation, the so-called "tumble on the wing" which made the swift monoplane pivot around the left wing, sweep downward and re-

The Wright Model "B" School Machine at Dayton, Ohio







Curtiss La Q. Day, Licensed Pilot at the Age of Seventeen

cover an even keel with astonishing ease. Climbing still higher Pettrossi now began demonstrating the whole of Pégoud's *haute école aérienne*. He first started with a loop so perfect that the machine hardly lost any height; then came several tumbles, sideways, downwards tail first, crowning which came the "helicopter," a feat which consists in holding the machine suspended in the sky by the propeller turning parallel with the earth.

Pettrossi concluded his exhibition with the "dead leaf drop," where the machine is left to fall any direction it chooses and landed in a masterly way on a rather bad ground by slightly pancaking, not without indulging just before the landing in an *apache danse* that sent thrills even into the hearts of the aero veterans present.

Upon being congratulated by his friends, Pettrossi modestly remarked: "This is nothing, I simply tried out the machine and just when I made the dead leaf drop some trouble developed with the motor, so I had to land."

Look out for Pettrossi's first public exhibition!

#### Curtiss La Q. Day

Curtiss La Q. Day, is one of the latest converts to the tractor type of biplane. Originally of the Wright School of aviation, the holder of a pilot's license at the youthful age of seventeen—Day

bids fair to become one of the biggest attractions of the coming season in the exhibition business. His ability as a safe and conservative flyer has already been recognized in his native city of Gibson City, Illinois, where several of the prominent business men have of their own initiative formed the La Q. Aeroplane Company. This corporation was formed for the promotion of young Day.

The new outfit ordered from the Benoist Aeroplane Company of Chicago, consists of a new Benoist exhibition tractor biplane of the latest model equipped with a 50 horsepower motor. The whole outfit being especially built and designed for Mr. Day personally, taking into consideration his extremely light weight of less than 100 pounds, Day is at present in his sophomore year at the University of Illinois.

#### Curtiss Co.—Magnet That Attracts Good Pilots

One more of the good American pilots has been attracted by the Curtiss Aeroplane Co. That is John Guy Gilpatric.

He has gone to Toronto, where Tony Jannus went only recently, and where have gone Vernon and S. S. Pierce and others.

Vernon is chief instructor of the Canadian Curtiss School at Toronto at which there are forty pupils enrolled and a waiting list that would do credit to an exclusive club.

#### Three Curtiss Pilots on Italian Aeroplane Ship Elba

J. S. Callan, W. E. Doherty, and T. T. Maroney, the Curtiss pilots—and all members of the Aero Club of America—are on the Italian aeroplane ship *Elba*, at Torrence, Italy.

Theodore B. McCauley, the Curtiss pilot, who has made a quick trip to Europe (country deleted by the censor) has been back a short while and will start again for (country again deleted by the censor).

#### CHICAGO NEWS

The first flying boat on the Great Lakes for the U. S. Naval Reserves was built under the supervision of Max Stupar, vice-president and constructor of the Chicago Aero Works. Governor Dunne's daughter christened the craft, *with water*, Mayor Thompson and a throng of invited guests being present.

#### Flies Over Boston in Machine Designed by Noble Foss

Gliding from a height of 4,000 feet above the Custom House Tower in Boston to the Harvard aviation field over six miles away was the feat performed by Harry M. Jones and his mechanic on June 10th in a new biplane designed by Noble Foss, son of Eugene N. Foss. The engine, an 80 h.p. Sturtevant, as well as the machine, was designed by the son of the former governor of Massachusetts, and both were built at the B. F. Sturtevant Company Works in Hyde Park, Mass.

#### Aeroplane Speedometer

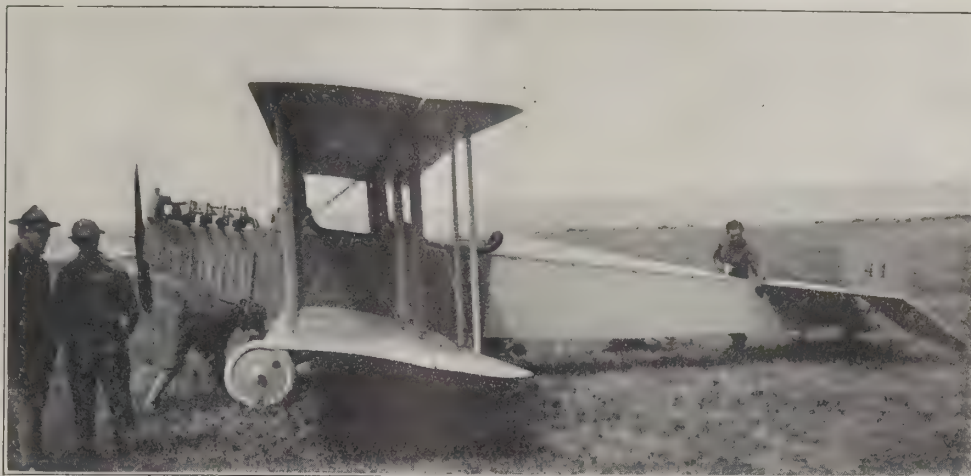
The aeroplane speedometer of O. A. Danielson, of New York, has a movable sight. This is so shifted along as to be kept in line with some fixed object on the surface of the earth, and from the rate of its shifting at a known height the speed of travel in the air can be readily determined.



Phil Rader, Superior Pilot with the Royal Flying Corps, Stationed at South Famborough, England



One of the new  
U. S. Army Curtiss  
Tractors at San  
Diego.



### Sturtevant News

Harry M. Jones thrilled thousands by his remarkable flights over Dorchester Bay recently, during the trial tests of his new tractor biplane. Travelling at an estimated speed of 65 miles per hour, at an altitude of a thousand feet and carrying a passenger, he remained in the air for periods of fifteen minutes at a time, putting his machine through all manner of manoeuvres.

Those who were fortunate enough to accompany Jones on the trial flights expressed themselves as being highly pleased with the remarkable inherent stability of the machine, its exceptional climbing and gliding ability and its lack of vibration while in the air.

Tests are now being made in connection with the lifting capacity of the machine and within a few days trials for endurance and speed will be made.

Jones has selected a six-cylinder Sturtevant motor for his power plant and states that the wonderful success of his machine is due to a great extent to the splendid performance of the engine which develops over eighty horsepower.

### Garden City Notes

The weather being ideal there was considerable flying done at the aerodrome during the past week.

Stevenson MacGordon in the 90 h.p. Gyro motored Mayo was out almost every day taking advantage of the splendid flying conditions. On Thursday, he carried W. Leonard Bonney, who has just arrived from Mexico to purchase new machines, for a trial flight and on Sunday demonstrated the machine before Grover Cleveland Loening, aeronautical engineer of the U. S. Army Aeronautical Corps.

Before leaving for Toronto, to join the Curtiss Aeroplane Company, John Guy Gilpatric completed the tests of the 110 Gyro motored Heinrich tractor before the English officers. Although he had been handling the machine only a few days, Gilpatric made some of the prettiest flights in it that have been seen at the aerodrome in some time.

As usual the indefatigable Millman was out whenever opportunity allowed, flying first the Schmitt and then the Gallaudet

in rapid succession. On Thursday he made a beautiful flight on the latter, carrying Mrs. Kate Boeckl, a prominent Washington Suffragist, as a passenger to height of over 3,000 feet.

### War Proving Boon to Aero Activity in Texas

Military activity on the Mexican border is finding a reflection in the development of aviation in Texas. At both Dallas and San Antonio flying schools have been established and near the latter city at Fort Sam Houston 10 aeroplane hangars are being built for an aeroplane squadron. The post is to be the army aviation center, it was recently announced, as well as a finishing school for army aviation students who receive lessons at San Diego, Cal.

Paul Vandavelde, manager of the Texas Aviation School, at Dallas, writes to the Aero Club of America that the chief pilot of the school Lester Miller, will take part in the club's national competition, to begin July 4, and that several of his 45 pupils desire to enter.

Mr. Grover C. Loening, chief of the Army Aeronautical Corps at San Diego, Cal., is now in the East, visiting the various construction plants.

Lieut. C. K. Bronson, U. S. A., recently visited the Aero Club of America with his father, Mr. Edgar Bronson, who is a veteran balloonist and one of the oldest members of the club.

Phil Billard is now flying at Topeka, Kansas.

Lieut. Carberry flew over the city of Buffalo on June 3rd, at a height of 3,000 feet.

Mr. Harry B. Wise, Business Manager of the Aeromarine Plane & Motor Company, informs us that Mr. Fred. Roberts of Oklahoma, was in New York recently and witnessed tests of the Aeromarine engine. He has purchased a Thomas Tractor equipped with a 100 H. P. Aeromarine engine for the trans-continental race. He also intends to purchase a duplicate machine.

Mr. Cresswell, Business Manager of the Thomas Aeroplane Company and Mr. F. W. Thomas, were in New York recently to witness the Aeromarine motor tests at Nutley, N. J.



Two Views of the New Curtiss Military Tractor Eight of which are being delivered to the U. S. Aviation Corps



## AEROPLANE ENGINES

By Neil MacCoull, M. E.

*This is the first part of a paper read by Mr. MacCoull before the Society of Automobile Engineers at its semi-annual meeting held at Detroit from June 16 to 17. Requirements of reliability, fuel economy and light weight are taken up in detail; the matter of high engine speeds as influencing weight being dwelt on in particular. Brief descriptions of the principal types of aeroplane engines are included together with many illustrations. A table will also be printed of the principal specifications of ninety-three engines.*

*The complete paper with the exception of the part describing those engines which have already been described in these pages, will be published in subsequent issues of AERIAL AGE. The already described engines with the dates of the issues are as follows:—Aeromarine, June 7, Johnson, May 24; Ashmussen\*, April 26, Rausenberger, April 26; Curtiss\*, April 5, Sturtevant, March 29, May 3; Duesenberg, May 10, Wells Adams, April 19; Gyro, April 19.*

\* Indicates illustration only.

**E**IGHT years ago there was not one aeroplane that had made a public flight of one mile. To-day there are about eight thousand licensed aviators, and flights of from 200 to 500 miles without stopping are hardly considered worthy of press notice. Last July, Reinhold Boehm, in Germany, made a non-stop flight of over twenty-four hours, during which he traveled about 1,500 miles. Such development is more rapid even than that of the automobile, which has never before been surpassed. This progress is all the more creditable because the problems developed by the aeroplane were far more difficult. If the designer of an automobile had a mistaken theory, the machine would probably not run, and he would change it. If the designer of an aeroplane had a mistaken theory, it might cause the death of the only man who could tell what had really gone wrong. Thus the early steps of automobile practice were mostly progressive, while those of aeroplane practice had to be repeated over and over again.

Not only was the process of learning from failure much slower, but the problems to be solved were vastly more intricate. The first automobiles were merely carriages equipped with engines, the carriages having been evolved by thousands of years of experiment. Even an occasional horsepower would make them move and that was all that was desired. The aeroplane, however, was in a new element. Not only was a powerful, reliable engine necessary to prevent landing on unchosen and possibly dangerous ground, but if the planes were not strong enough for the stresses of unexpected gusts of wind from unexpected directions, or if the center of air-pressure varied erratically because of the particular curvature of the wings, or if the rudders or elevators were not large enough, or if any of a score of other

details was not just right, a serious and even fatal accident would often result. With such obstacles in the way of progress, the present development seems wonderful indeed.

Most of this development has been made by European governments, because of the military value attached to the aeroplane, which has led them to spend over \$100,000,000 during the last three years for this work alone. War has now proved the wisdom of this expenditure, for the aeroplane has revolutionized all military tactics. The range of the artillery and the location of the enemy's guns are determined by aeroplane. Not one body of troops can be moved by either side without the knowledge of the other. Modern warfare is like a game of cards in which each player sees the cards of the others, all because of the aeroplane. A further and conclusive proof of the necessity for aeroplanes in modern warfare is furnished by the fact that every American manufacturer who can turn out even reasonably good aeroplanes is rushed to the limit with orders. All these machines must have engines. The fact that the best engines are none too good, and that large sums of money are paid for them even as they are, should be a great incentive to every manufacturer to bring out an engine measuring up to the requirements. In attempting to do so it must be realized that the present demand is for high power; from about 125 horsepower up to 200. Orders for hundreds of engines have had to be refused by American manufacturers during the last six months because they did not have engines of this power which had been so developed as to make deliveries possible a few weeks after the order.

The present war is the greatest stimulus aviation has ever had, and there is every evidence that by the time peace is restored, aeroplanes will have been so highly developed, and their prac-

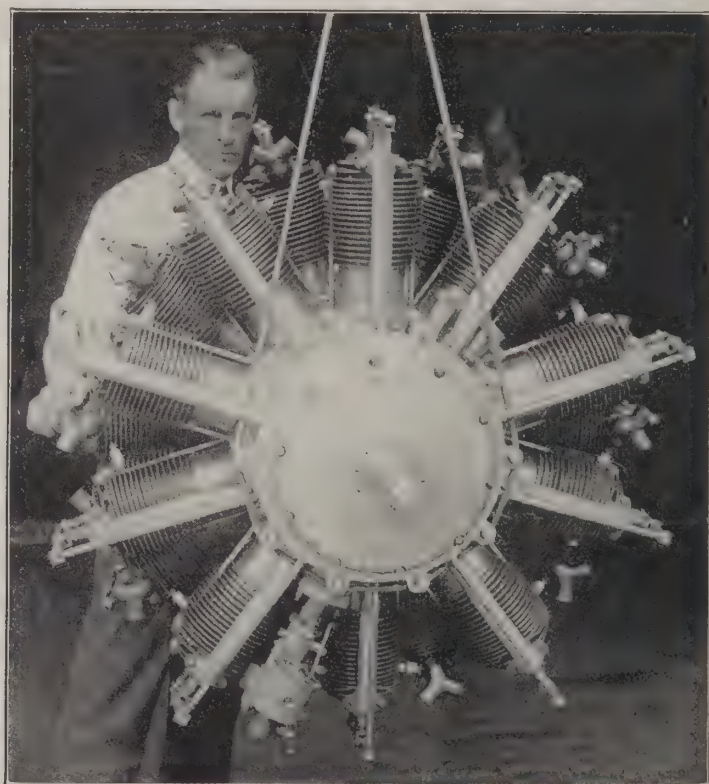
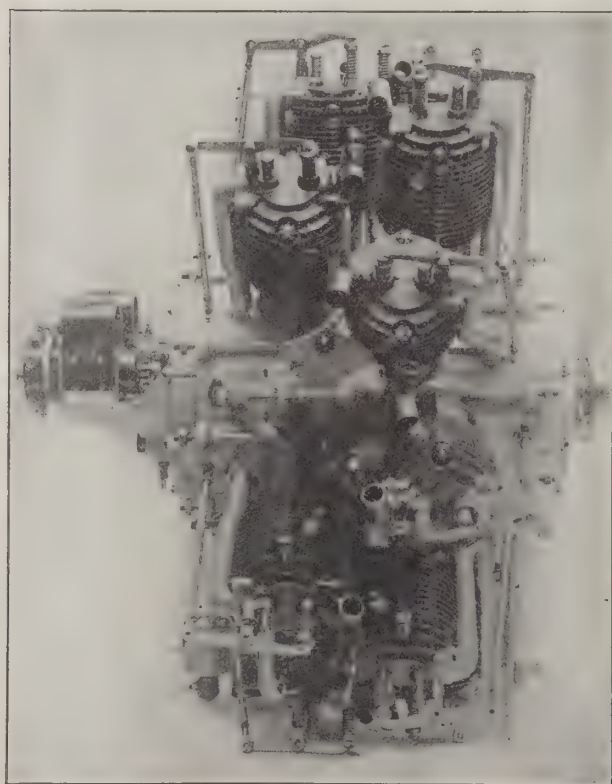


Fig. 38.—200 H.P. Twenty-Cylinder Anzani Radial. The side view shows the arrangement of the cylinders on the crank case, and the valve mechanism. The intake valves are automatic



ticability so well demonstrated that there will be a considerable demand for them in other walks of life. Touring and even commuting are not at all improbable, particularly with flying-boats. The U. S. Postmaster General has asked for an appropriation to use for carrying mail by aeroplane in places where, due to poor transportation facilities, days or even weeks are necessary for the delivery of mail at present, while an aeroplane could cover such territory in an hour or two. The appropriation has not been granted, but there are good prospects for next year. It is reasonable to expect that a considerable number of aeroplanes will be employed in mail carrying during the second year, increasing rapidly each year thereafter. The shrewd engine manufacturer will do well to look into the possibilities of the aeroplane.

### PRIME REQUISITES FOR AN AEROPLANE ENGINE

There are three prime requisites for a good aeroplane engine: reliability; small weight per horsepower; and low fuel and oil consumption. Since these requirements are more or less conflicting, a compromise is necessary and the designer is confronted by the delicate question: which of these is the most important? German designers with their customary thoroughness have produced more reliable but, generally speaking, heavier engines than those of England and France. For military work this has

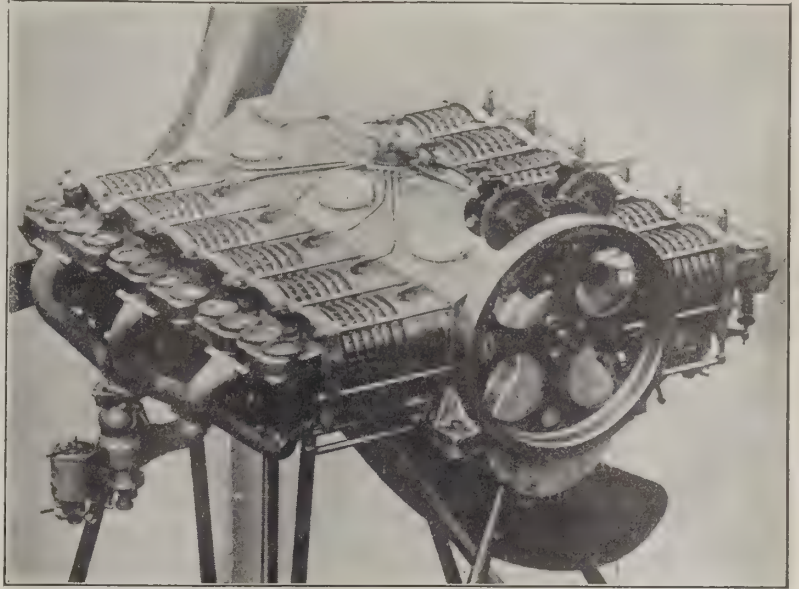


Fig. 37.—105 H.P. Twelve-Cylinder Ashmussen Engine with Vertical Valves Operated Through Bell-Cranks

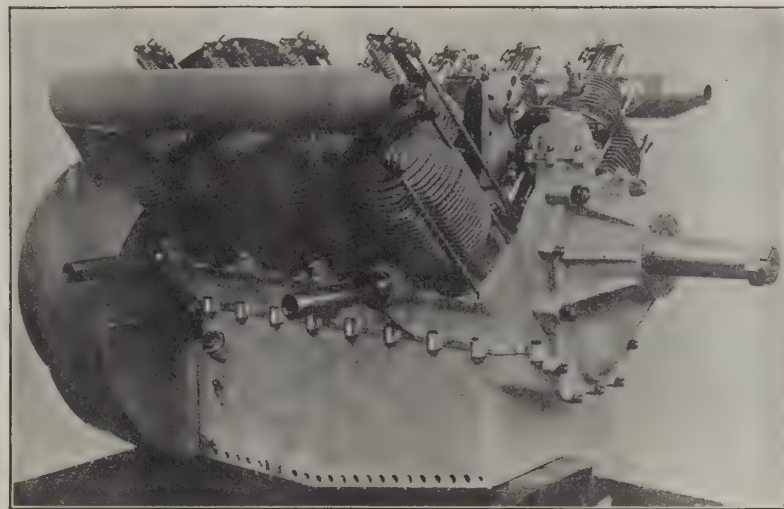


Fig. 39.—80 H.P. DeDion with Centrifugal Blower

proved a weak point because the lighter and hence faster aeroplanes can easily secure positions of advantage over their enemies, which usually makes it possible to bring them down. For all non-military service, however, except racing, reliability is unquestionably the fundamental requirement.

The balance between weight and fuel economy will be fixed by the particular service required, for the matter of importance is not the engine weight only, but the total weight of the engine and fuel. This is easily appreciated when one realizes that the fuel required for a flight of six or seven hours weighs as much as the engine itself. For short flights during which but little fuel is used, an exceptionally light engine is desirable, for the poor economy usually characteristic of such an engine is not very important. However, as the length of flight increases, economy becomes more and more important.

### SECONDARY REQUISITES

Other requisites which must not be overlooked, though they are by no means as important as those just mentioned, are: compactness; accessibility; freedom from vibration; flexibility; silence, and reasonable cost. Little need be said in regard to these as they are almost self-evident to any automobile engineer.

### RELIABILITY

The reliability of an engine is the final proof of the skill of its designer in mastering every little detail. This is particularly true of an aeroplane engine because its service is so much more severe than that of an automobile engine, that any weakness will show itself much sooner. Since weight is of such great importance, every member of an engine will probably be designed so as to be stressed to the maximum safe limit. For this reason any cast metal should be avoided as far as possible because of its uncertain strength. In nine engines a certain cast member will be amply strong, yet in the tenth some imperfection in the casting may cause a failure at a critical moment. Forged or rolled steel is one of the most dependable materials known to-day, and as it is also the lightest for a given strength, it is ideal for aeroplane engines. Since the greatest strength of steel is utilized when the stress acting on it is one of tension, it is advisable to design the engine so that parts which sustain the greatest strains shall meet with purely tensional stresses as far as possible.

(Continued in Next Issue)

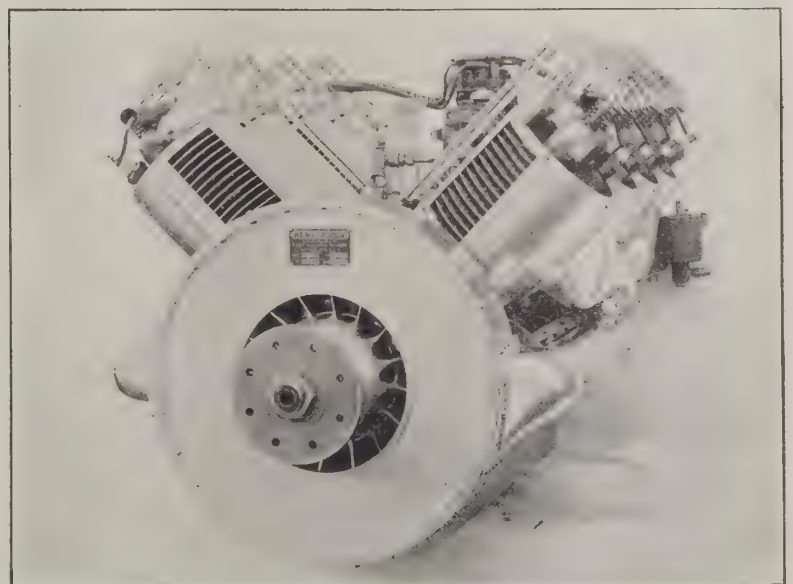


Fig. 40.—80 H.P. Kemp, Showing an Unusually Compact Air-Cooling System



## Aeroplane Competition and Transcontinental Routes Conditions—To Concentrate Efforts

The letter follows:

June 16, 1915

My dear Mr. Secretary:

Each day brings a flood of mail and telegrams and many visitors to the Club House, 297 Madison Avenue, from officials of the National Guard and Naval Militia of different states who want to get aeroplanes for use in the coming manoeuvres; from aviators, sportsmen and people of every age and calling, who want to offer their services, and from Aero Clubs and other organizations who already have started, or who want to start, movements to develop aviation corps in their own states. Also from states, cities and newspapers, making various offers and wanting to know what to do to participate in the movement.

The presentation of flying boats to the Naval Militia of New York State by the Curtiss Aeroplane Co., and to the Illinois Naval Reserves by the two Chicago sportsmen, Messrs. A. M. Andrews and Stuart MacDonald, created especial interest in the National Guard and Naval Militia of the different states.

In the past week we have secured aeroplanes for Pennsylvania, New York and Oklahoma, as follows:

Mr. Fred. R. Roberts, of Okmulgee, Oklahoma, who has bought a new Thomas tractor biplane, for the National Aeroplane

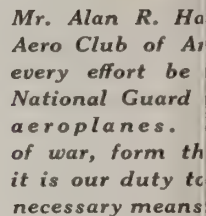
Mr. William S. Luckey, the aviator, offers his services and the use of one of his two Curtiss biplanes for three weeks, beginning July 10th.

The others have been transmitted by the Aero Club of America to Governor Charles S. Whitman and Brig. General John F. O'Ryan, for the New York National Guard; to Governor M. S. Brumbaugh and Commander T. T. Nelson, Jr., for the Naval Militia of Pennsylvania and to Governor R. L. Williams and Adjutant General Thomas J. Stewart, for the National Guard of Oklahoma.

The individuals, the cities and the states who were co-operating in the developing of these plans felt that nothing further should be done until more favorable conditions should exist. As you know, the conditions have remained unchanged; the possibility of intervention in Mexico has rather made them worse.

The demand for trained men is now greatly in excess of the supply. Half a dozen smaller constructors are also unable to make entries in the Competition because of large prospective orders which would employ all their aviators, as well as the necessity of keeping their present machines and aviators at hand to demonstrate to prospective buyers.

As a test, while waiting for a change of conditions, it was proposed to hold a one-month trial Competition. We wrote to constructors and aviators, asking them to state frankly whether



Mr. Alan R. Ha  
Aero Club of A  
every effort be  
National Guard  
aeroplanes.  
of war, form th  
it is our duty to  
necessary means

# of New York State to Provide for State Air Forces—National Must Be Postponed On Account of Near-War n Supplying Aeroplanes for Militia

they could participate in the Competition if it should start July 4th. The replies showed that only two could start on that date. The Aero Club of America then proposed to the Aero Club of Illinois, which is co-operating in this matter, to plan to hold a one-month Competition, beginning August 15th, unless conditions forbid. It is to be hoped that the Chicago strike may not prevent this club from participating.

On account of the scarcity of aviators provided with aeroplanes capable of cross-country flying, we cannot even take advantage of the numerous offers from cities of substantial prizes for circuit races. They request a guarantee of participation of a large number of aviators—and this guarantee cannot be given.

It is, of course, regrettable that the unprecedented conditions that have evolved in the past two months may prevent the holding of the Competition and the transcontinental races—but that cannot be helped. The entire world regrets the Lusitania disaster, and the plans of nations have had to be changed because of it. Likewise, plans and movements of national importance have had to be altered or have suffered by the entrance of Italy in the war, and by the incidents which may necessitate intervention in Mexico. It surely is not the time to consider sporting events.

But the postponement of the Competition and the transcontinental race will not prevent the continuation of the work to develop aviation squadrons for the National Guard and Naval Militia of all the states. The concentration of effort on this has already resulted in providing aeroplanes for four states—a small number, too small to be of any real value in case of need, we realize, but nevertheless of great value at this time, when the Militia needs to manoeuvre under conditions as similar as possible to conditions to be met in present day warfare. While the employment of a few aeroplanes will be far from creating these conditions, it will at least afford an opportunity to the rank and file, who have never seen an aeroplane to become familiar with the possibilities of this latest instrument of warfare.

The more important results are evidenced in the efforts now being made in different states to add aerial forces to the regular Militia. You no doubt know of the efforts being made to obtain an appropriation of \$25,000 for the organization of aviation corps in connection with the National Guard of the state of Ohio, and of the proposed amendment of the Constitution of New York State

to provide for aerial forces for the Militia of New York State.

This expression of willingness on the part of states to provide for aerial forces, together with the gifts of aeroplanes to the Militia, attains, less extensively, but sooner, the results which we hoped to attain by holding the Competition. Therefore, there is compensation for the loss.

In the event of conditions not becoming in time to hold the Competition this year, it will be held next year, at which time the states which wanted to participate this year may be in a position to enter land and water machines used by the National Guard and Naval Militia.

The most immediate need, next to the acquisition, of aeroplanes for use in the coming manoeuvres, is to supply the Militia with information necessary to enable it to organize the corps in the best possible way, with uniformity, and to enable the authorities of states which do not possess aeroplanes, and wherever the number of aeroplanes are insufficient, to nevertheless form corps, teaching the men the rudiments of aeronautics, the principles of aerodynamics, essentials to the care, operation and repair of engines and machines, theory of internal combustion engines, meteorology, and other fundamental principles such as are taught to the Army and Navy officers who join the aviation corps.

Can the War Department supply this information, or take direct charge and guide the aeronautical activities of the land militia? We are addressing a similar inquiry to the Navy Department regarding the Naval Militia. If this is possible, much can be accomplished while waiting to obtain more aeroplanes.

Among the plans of the Aero Club of America to foster the interests of the youth of this country in aeronautics, are two plans, which may interest you, as follows:

1. To offer to every military educational institution, a medal, to be awarded annually to the student of each for the best showing in military aeronautics.
2. To offer prizes to the young members of Model Aero Clubs and other junior aeronautical organizations for a series of monthly contests to be held this year.

May we ask the War Department to furnish the Aero Club of America with a list of the Military schools and other institutions recognized by the War Department, to whom the above mentioned medals could be offered?

If other and more feasible ways of advancing the aeronautical movement in America than those now being followed by the Aero Club of America occur to you, will you kindly advise us?

Thanking you for your courtesies, I beg to remain

Yours very sincerely,

ALAN R. HAWLEY,  
President, Aero Club of America.

President of the  
a, who urges that  
e to provide the  
Naval Militia with  
they will, in case  
st line of defense,  
ply them with the  
defense."

## Do You Find Aerial Age on Your Newsstand?

¶ Through the American News Company we are already placing Ten Thousand copies weekly on the newsstands—but we want to place Fifty Thousand.

¶ We ask the co-operation of all our readers by requesting that they inform us whenever they find that AERIAL AGE is not obtainable at any newsstand—on the Street, in Hotels, in the Subway or Elevated Stations, or in the Railroad Depots.

¶ We shall heartily appreciate such co-operation.



## Curtiss Granted New Flying Boat Patent



The 1910 Curtiss Flying Boat

A patent, covering the most important invention in connection with water flying for which any patent has yet been granted, has just been issued by the United States Patent Office at Washington to Glenn H. Curtiss. It is listed officially as No. 1142754 and was granted at noon on June 8th.

The arrangement and construction of flying boats which enables them to readily fly from the water into the air is covered by this patent and the owner is given the exclusive rights of manufacture. Practically all flying boats as far as known and now used in this country or being built here embody this invention.

One of the principal features of the patent relates to the step or ridge formed in the bottom of flying boats.

In view of the widespread use of flying boats at the present time, the patent is considered of the greatest importance. The principal object of the invention is to provide a hydro-aero-machine having a relatively seaworthy and stable central body boat which may plane upon the surface of the water at high speed and readily break from the water into the air, and also readily alight upon the water.

The development of aviation during the last few years has been remarkable and great importance is attached to the construction of seaworthy flying boats made possible through the invention of Mr. Curtiss. Early experiments with flying boats were made by Mr. Curtiss in 1910 at Hammondsport, N. Y.

Continuing his experiments, Mr. Curtiss developed the now well-known flying boat as used by the United States Navy and during the summer and fall of 1914 built a huge machine for Mr. Rodman Wanamaker which was intended to fly across the Atlantic Ocean. The boat hull of this machine, which carried a covered cabin, was capable of withstanding severe weather and lifted an 1800 pound load in addition to its own weight. During its trials on Keuka Lake, it carried as many as twelve people at one time.

The following is a description of the invention as set forth in the patent. The full text of the claims will be published in the next issue of *Aerial Age*.

### Description of Patent

To all whom it may concern:

Be it known that I, GLENN H. CURTISS, citizen of the United States, residing at Hammondsport, county of Steuben, and State of New York, have invented certain new and useful Improvements in Flying-Boats, of which the following is a clear, full, and exact description.

My invention relates to hydro-aero-machines, and more particularly to those adapted to rise from the water into the air when driven at speed upon the water.

The present application is a division of one previously filed by the same inventor on September 6, 1912, Serial Number 718,840, and since patented as No. 1085575, January 27, 1914.

The principal object of my invention is to provide a hydro-aero-machine which may readily break from the water to rise into the air.

Another object of my invention is to provide a hydro-aero-machine of the above character having a relatively seaworthy and stable central body boat.

A further object of the invention is to provide a hydro-aero-machine of the above character which may plane upon the surface of the water at high speed and also readily alight upon the water without tipping over forward.

Further objects of my invention are to protect the aviator's body from head air currents and water spray, to give an unobstructed forward view to the aviator, and to so locate and arrange the aerial control and propelling means that they will be protected and will operate in an efficient manner.

The several advantages of the present improvement will more clearly appear from the following specification, while the scope of the invention will be pointed out in the appended claims.

In the specification and drawings I have shown and described the preferred embodiment of the invention, and in the drawings,—

Figure 1 is a side elevation of the entire machine; Fig. 2 is a front elevation of the same; Fig. 3 is a plan of the fuselage or boat portion with the supporting planes removed; Fig. 4 is a detail cross-section through said boat body along line 4—4 Fig. 3; Fig. 5 is a fragmentary plan of one end of the upper supporting plane; Fig. 6 is a plan of a wing tip pontoon; Fig. 7 a side elevation of said wing tip pontoon; and Fig. 8 a transverse section through line 8—8 of Fig. 6 of the wing-tip pontoon.

Referring more particularly to the drawings, there is shown a boat body 1 of sufficient buoyancy for supporting the entire machine upon the water and having mounted above the same one or more supporting planes 11 and 12 connected by the usual forward and rear struts 14, 14a forming an aeroplane. These supporting planes 11 and 12 are arranged in lifting relation to the boat

when floating on the water, and in the preferred form of the invention shown the planes are located with the center of gravity lying intermediate their forward and rear edges. The center of gravity of the machine, without the aviators aboard, is indicated by the dot *c*, *g*, somewhat forward of the step. Of course with the aviator or aviators aboard, the center of gravity is shifted somewhat forward and downward from the point *c*, *g*.

The machine is provided with suitable driving means consisting of engine 15 and air-propeller 16 of sufficient capacity to drive the machine at such speed as to enable the air planes to lift said machine clear of the water in flight. The engine is preferably mounted between the air planes 11 and 12 and intermediate the forward and rear edges thereof with the aerial propeller mounted directly on the main shaft of the engine and located at the rear of the main planes. I prefer to use a single propeller located above the longitudinal axis of the boat where it will be substantially protected from flying spray by the body boat beneath the same. The bow of the boat as shown is free from aerial propelling means and stabilizing surfaces to give the aviator an unobstructed forward view and to protect such surfaces and propeller from flying spray and from damage when the boat is alighting on the water.

The boat body 1 is of seaworthy construction for travel on the water and contains therein, preferably at its forward part, the cock-pit 8 with the operator's seat and other controls more particularly described hereinafter, and extends as shown from the front to rear of the entire machine to serve as the fuselage therefor. To facilitate the breaking away of the boat from the water when the machine rises in flight, the bottom of the boat is flat as shown in Fig. 4, and is provided with a rearwardly facing step 5 (see Fig. 1) at a point approximately below its center of gravity. The bottom of the boat inclines from this step 5 upwardly toward the front at 4, and also upwardly at 6 toward the rear. The stern 3 of the boat looking from above is preferably pointed as shown in Fig. 3, while the bow 2 of the boat is broad with a scow-like prow.

It will be observed that the boat or floating means for the machine as illustrated in the present embodiment of the invention comprises forward and rear buoyant portions projecting respectively well forward and aft of the main planes, the machine being normally supported on both said buoyant portions to increase its longitudinal stability on the water. The rear portion is in the form of a long relatively light tail portion extending aft of the main air planes. In this embodiment of the invention the sides of the rear portion taper as stated to give a narrow tail.

The bottom of the forward portion of this boat is in the form of an effective hydroplaning surface extending from the nose of the scow bow downwardly and rearwardly to a point in advance of the main air plane surface, and thence rearwardly and more horizontally terminating at the rearwardly facing step approximately beneath the center of gravity of the machine and intermediate the forward and rear edges of the main air planes, from whence the bottom inclines upwardly as stated. This hydroplaning surface as shown in the drawings, extends the full width of the boat between the submerged sides of the boat extending along the length of this surface to get the maximum hydroplaning width for a given shaped boat, and the bottom of the boat extending along the tail portion is in the form of a reverse hydroplaning surface. By "reverse hydroplaning surface" I mean a surface which is inclined upwardly and rearwardly, permitting the stern to be tilted down (and thereby having just the opposite effect from a hydroplaning surface the function of which is to lift) and yet one that is not curved or rounded such as would produce suction at the tail to hold the tail of the boat in the water and interfere with the elevation of the tail or breaking of the tail from the water when the boat is planing at speed with a tendency to rock forward substantially about the rear extremity of its forward hydroplaning surface into a more horizontal position of less resistance to headway. In the present form of the invention as stated, this reverse hydroplane surface is flat. The forward broad and relatively sharply downwardly inclined hydroplaning surface beneath the bow gives substantial resistance to diving, should the boat take the water at too sharp an angle and helps to prevent the boat from tipping forward and tends to cause it to glide into a horizontal position.

When boats speed up on the water the tendency of the stern or tail of the boat is to suck or hog down in the water, and in hydroplanes it has been proposed to more or less prevent this by extending a deeply stepped bottom along the stern or tail of the boat, producing low water-resistant hydroplane surfaces tending to hold the stern up. In hydroaeroplanes, however, this is undesirable, since it is desirable at times for the tail of the boat to incline or rock downwardly about the rear extremity of the forward hydroplaning surface as well as to have the tail rocked upward about said extremity, and head resistant surfaces on the projecting tail portion extending down to or below the rear

(Continued on Page 331)



The "America," designed and built by Glenn H. Curtiss, the largest flying boat in the world. This machine was designed to fly across the Atlantic

# Drawings of the New Curtiss Flying Boat Patent

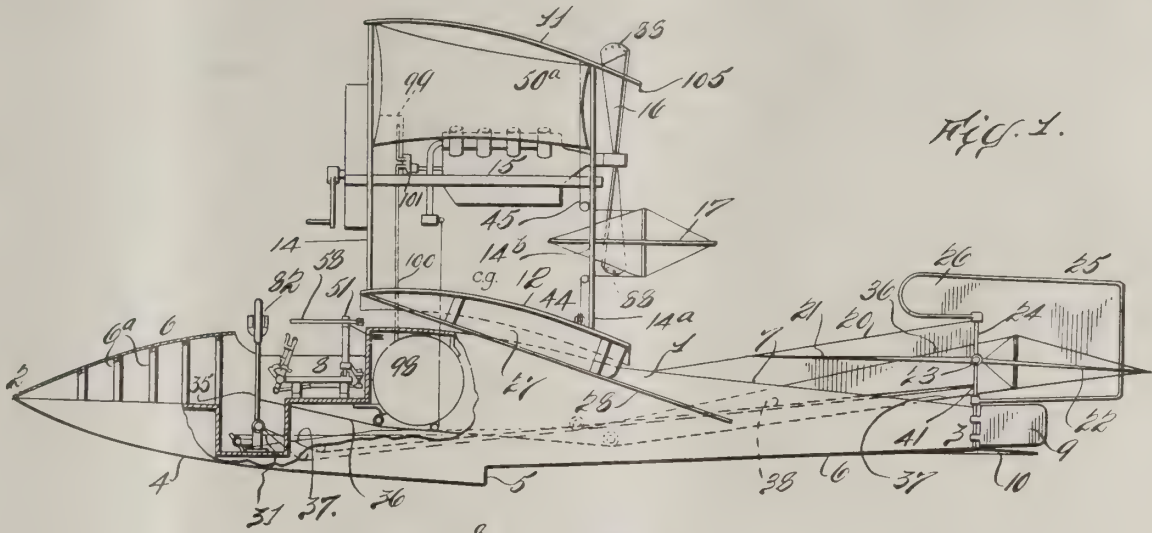


Fig. 1.

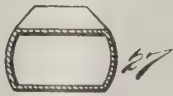


Fig. 8.

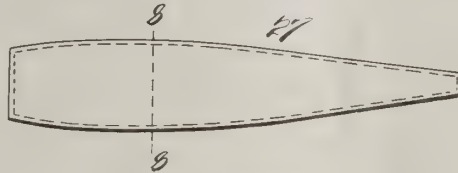


Fig. 6.



Fig. 7.

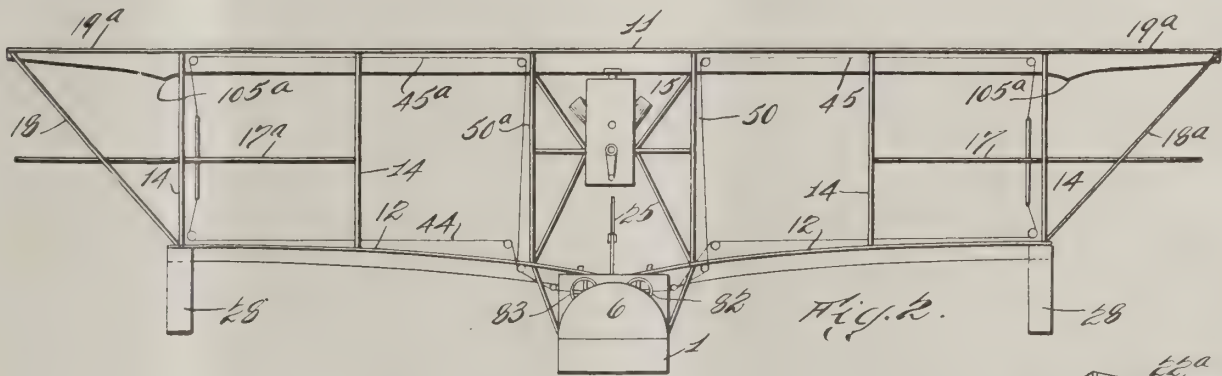


Fig. 2.

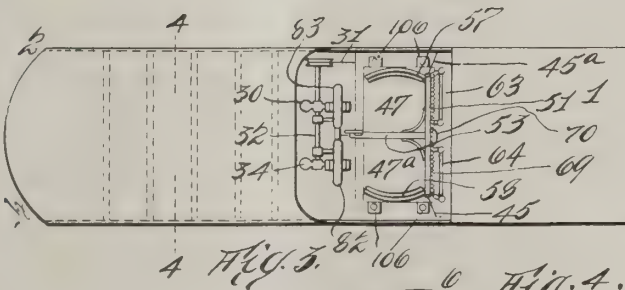


Fig. 3.

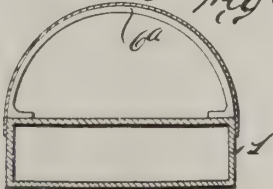


Fig. 4.

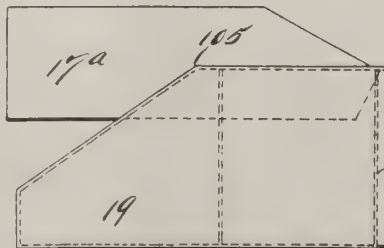
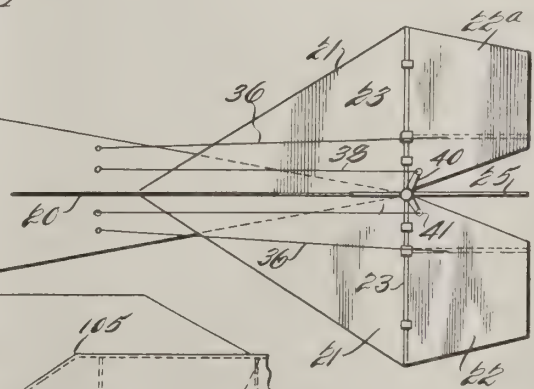


Fig. 5.







# Foreign News

Edited by L. d'Orcy



## Austria

The following official note was issued in Vienna on June 8:

"A telegram from our naval command states that naval flying machine L-47, Commander Bonfield and Observer Naval Cadet von Strobel, this morning successfully bombarded Venice and dropped bombs on a balloon shed at Murano (two miles northeast of Venice), and also on an enemy torpedo boat destroyer.

"The enemy airship Citta di Ferrara, returning from Fiume at 6 o'clock this morning, was set on fire and destroyed southwest of Lussin, Dalmatia, by our naval aeroplane L-48, commanded by Lieutenant Glasing and with the Naval Cadet von Fritsch as observer. Two officers and five men of the crew were captured."

## France

An official report by the French War Office on May 26 says:

"A French aerial squadron composed of eighteen aeroplanes, each carrying fifty kilos (110 pounds) of projectiles, this morning bombarded the chemical factory at Ludwigshafen, on the Rhine, opposite Mannheim.

"The works of the Badische Anilin and Soda-Fabrik Company, the largest explosives factory in Germany, occupy an entire quarter of Ludwigshafen, and an important annex has been established near Oppau, a mile and a half from Ludwigshafen.

"The aeroplanes threw forty-seven four-inch bombs and two six-inch bombs on the main establishment, and thirty-six four-inch bombs on Oppau. All the bombs reached the mark.

"Toward 6:15 o'clock three enormous columns of yellow flames could be seen at Ludwigshafen, and at 6:30 the aviators saw Oppau covered by vast volumes of smoke.

"The aeroplanes were fired at, but all returned except one. According to the pilots, the latter machine was obliged to land at Ludwigshafen, and was seen to be in flames as soon as it landed. They believe that the landing, which was caused, no doubt, by the enemy's fire, was effected normally, and that the pilots burned the machine to prevent it from falling into the hands of the Germans.

"This expedition, which shows to what degree of skill and daring our aviators have attained, constitutes the finest aerial exploit yet accomplished during the war."

The U. S. Consular Report, Annual Series, of May 18, 1915 states:

"The year 1914, on the whole, was a favorable one for the French aircraft industry. While the exports to foreign countries, particularly to Russia and Great Britain, showed a slight decrease as compared with the previous year, the large Government orders for aeroplanes and hydroaeroplanes have kept the factories running at their full capacity ever since the outbreak of the war.

There were 177 aeroplanes, valued at \$1,731,000, exported in 1914, against 271, valued at \$1,942,000, in 1913. There were also 15 hydroaeroplanes, valued at \$167,000, exported, as compared with 15, valued at \$154,000, in 1913.

## Great Britain

An Associated Press dispatch from London gives the following additional information about the Zeppelin raid upon the British capital on June 1:

"The air raiders used two kinds of bombs—one was of incendiary type and the other an explosive filled with shrapnel. They did about equal damage, so far as can be judged, and many of those injured suffered from wounds caused by the exploding incendiary bombs, although the severer wounds came from flying shrapnel.

"At the parish church of Whitechapel the rector has in his possession what is probably the best specimen of the incendiary bomb. It is pear-shaped and stands from 12 to 14 inches high, with a wire handle like that attached to a tin bucket. Its casing is of zinc, covered with a wide meshed wire. The space between this wire and the zinc casing is filled with hemp, soaked in petroleum to make it highly inflammable, and held in place by the wire. At the top there is a contrivance something like a cork, with a metal band which loops outward

one end fastened securely to the cylindrical corklike affair and the other made only fast enough so that when the bomb strikes an obstacle it will be jarred loose, thus serving as a sort of trigger and setting fire, through some chemical arrangement to an explosive, which in turn ignites the petroleum-soaked hemp and tears open the bomb so that the inflammable material inside will ignite.

"So far as is known, all the explosive bombs exploded. These bombs are of a much finer variety than their incendiary brethren. They are made of brass, finely turned out and highly polished. Just what type they were can only be determined by looking at fragments. It appears, however, that they, too, are shaped like a pear, standing ten to twelve inches and weighing fifteen to twenty pounds. There is one fragment which is plainly part of the small propeller which such bombs have. The propeller is a safety device. When the bomb is dropped from aloft the propeller begins to spin. After a certain number of revolutions the firing pin of the bomb is released, so that when the bomb strikes the explosion takes place. If the propeller does not make these turns—and it will not unless released—the bomb may strike the ground, but will not explode."

## Germany

According to the *Daily Mail's* correspondent at Copenhagen the new type of Zeppelin constructed for carrying poisonous gases has three tanks carrying these gases below the navigating chamber and also apparatus for manufacturing the gases during a voyage.

The crew is smaller than those of the old Zeppelins. The speed is much greater. It is reported in Copenhagen that ten ships of the new type already have been built.

The new Zeppelins use aerial torpedoes made of aluminum and filled with gas, which sustains them, while they are directed by ether waves and exploded at any point. They can be directed from a great distance by this means.

Recent German casualty lists contain the names of 56 airmen, of whom 11 were killed and 35 wounded, the remaining 10 being missing.

A dispatch from Copenhagen to the *London Daily Mail* says that on June 3 a gigantic Zeppelin of an entirely new type caused general surprise all along the Baltic when making a trial journey over the international route between Sweden and Denmark. It was visible from all the coast towns.

The airship differs considerably in form and dimensions from the earlier Zeppelins. It is heavily armored and is supplied with three reservoirs for poisonous gas.

A German official note issued on June 7 says:

"On the night of June 4-5 German naval dirigibles attacked the fortified mouth of the Humber (on the east coast of England), the naval port of Harwich and the harbor establishment at Harwich.

"They were conspicuously successful. Many bombs were dropped and there were a large number of explosions. One particularly violent explosion was that of a gas tank or oil tank which was hit. Bombs were dropped on the railroad depot.

"German airships were shot at vigorously by guns on land and on ships. They were not hit, and returned safely."

## Serbia

According to a dispatch from Nish, Serbia, to the Havas News Agency, on June 10 three Austrian aeroplanes appeared over Kraguyevatz, where there are an arsenal and factories for arms and ammunition, and dropped three bombs. Three persons were killed and ten were wounded.

Serbian aviators met the returning Austrian aeroplanes at a point near Smederevo. One of the Austrian machines, struck by bullets from a Serbian quick-firing gun, fell to the earth in Austrian territory. A thick cloud of smoke was seen at the spot where this machine landed.

## Map Showing Aircraft Bases of Austria-Hungary and Italy

A cross means an aeroplane or seaplane base.  
A dot means an airship base.

### Austria-Hungary

1. Trento (airships and aeroplanes).
2. Gorizia (aeroplanes).\*
3. Trieste (seaplanes).†
4. Laibach (aeroplanes and airships).
5. Fiume (seaplanes).†
6. Pola (seaplanes, aeroplanes and airships).†
7. Sebenico (seaplanes).†.

### Italy

- A. Milano (Baggio for airships, Taliedo for aeroplanes).
- B. Brescia (aeroplanes).
- C. Verona (Bosco Mantico, airships and aeroplanes).
- D. Padova (aeroplanes).
- E. Venice (seaplanes, Campalto for airships).†
- F. Piacenza (aeroplanes).
- G. Ferrara (airships and aeroplanes).\*
- H. Bologna (aeroplanes).
- I. Pisa (aeroplanes).
- K. Florence (aeroplanes).
- L. Pesaro (aeroplanes).
- M. Jesi (near Ancona, airships).†
- N. Perugia (aeroplanes).\*

\*Captured by the Italians.

†Attacked by enemy aircraft.

(The chief seaplane bases of Austria and Italy—Pola and Venice—are only 90 miles apart).





# MODEL NEWS

Edited by WALTER H. PHIPPS



## CLUBS

THE AERO SCIENCE CLUB OF AMERICA  
29 West 39th Street, New York City

PACIFIC NORTHWEST MODEL  
AERO CLUB  
915 Ravenna Boulevard, Seattle, Wash.

LONG ISLAND MODEL AERO CLUB  
401 Grant Ave., Cypress Hills, L. I.

BAY RIDGE MODEL CLUB  
6730 Ridge Boulevard, Bay Ridge, Brooklyn

CONCORD MODEL AERO CLUB  
Concord, Mass.

SUMMIT MODEL AERO CLUB  
26 Shady Side Avenue, Summit, N. J.

THE ILLINOIS MODEL AERO CLUB  
Room 130, Auditorium Hotel, Chicago, Ill.

TEXAS MODEL AERO CLUB  
517 Navarro St., San Antonio, Texas

MILWAUKEE MODEL AERO CLUB  
402 Bradford Avenue, Milwaukee, Wisc.

CONCORD MODEL CLUB  
c/o Edward P. Warner, Concord, Mass.

AERO CLUB OF ST. LOUIS  
Columbia Bldg., 8th & Locust Sts.,  
St. Louis, Mo.

MODEL AERO CLUB OF OXFORD  
Oxford, Pa.

It is the intention of the publishers of *Aerial Age* to promote interest in and encourage scientific model building and flying.

To this end there will be devoted a full page each week to Model News. It is hoped to make this department as instructive and interesting as possible and so wide in scope as to cover the activities of model flyers in all parts of the country.

All model flyers are urged to co-operate by sending in photographs, drawings or descriptions of new and original machines or devices, which they think would prove of interest to others. Address all matters pertaining to models to the Model Editor, care *Aerial Age*, 116 West 32nd St., New York City.

### Illinois Model Aero Club News

On the third Friday of this month election of officers for the next six months will be held. The "stumpers" are herewith warned to prepare their orations previous to the meeting, as Mr. Laird has decided that no "stalling" will be allowed.

Again Mr. Buck Weaver brought to the club meeting an interesting speaker. Mr. L. E. Kramer, of the U. S. Army Signal Corps, was his "find" last meeting. Mr. Kramer gave a very interesting talk on life in the Philippines, and upon our duty to the government. Mr. Kramer has promised to be on hand at the model picnic with some rousing soldier tales.

A list of rules has been sent to Milwaukee model club for approval in regard to the coming two meets between the clubs.

The distance meets seem to be getting better and better. Last Saturday two members went a distance of eighteen hundred feet. As Mr. Pease's model flew over the fence his distance had to be judged by the eye and the contest committee awarded him a tie for first place with "Tommy" Hall. Ellis Cook was third.

The club extends its best wishes to Harry Wells and his attractive little tractor biplane. If Mr. Wells delivers the goods as he did when a model enthusiast, we feel safe in predicting that he will be the first aviator in the U. S.

### Aero Science Club

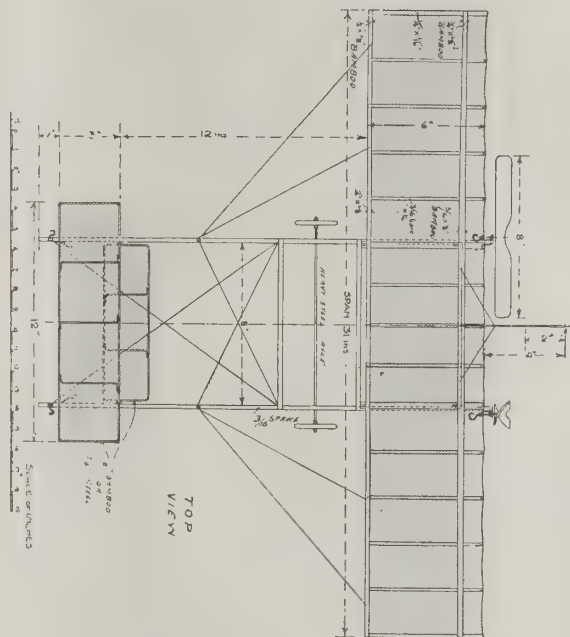
By G. A. Cavanagh

At the meeting of June 12th, it was decided to hold the efficiency contest at Garden City, Long Island, N. Y. This place was decided upon as being easily accessible to the majority of members who will participate in the contest and is the most suitable of any place in the vicinity of New York City for the holding of such a contest. Mr. Gaines of the Hudson Wright Company has offered as a first prize a ride in his flying boat from New York to Long Beach, Staten Island, to be competed for in a contest which contest may be arranged by the A. S. C. Nothing definite concerning the contest has been decided upon.

Mr. John Fleming has recently been experimenting with a kite of very large dimensions and claims same to have been successful. The kite was constructed by himself and is original. Mr. Fleming promises full details of the kite which will appear in a subsequent issue.

Many members are now ready for the efficiency contest. All members desiring information concerning the rules can obtain such information from the Secretary or see copy of rules now at the Club Room.

Club pins are now in the possession of the Treasurer, Mr. Frank Broomfield. For further information address the secretary, Mr. George A. Cavanagh, 29 West 39th St., New York City.



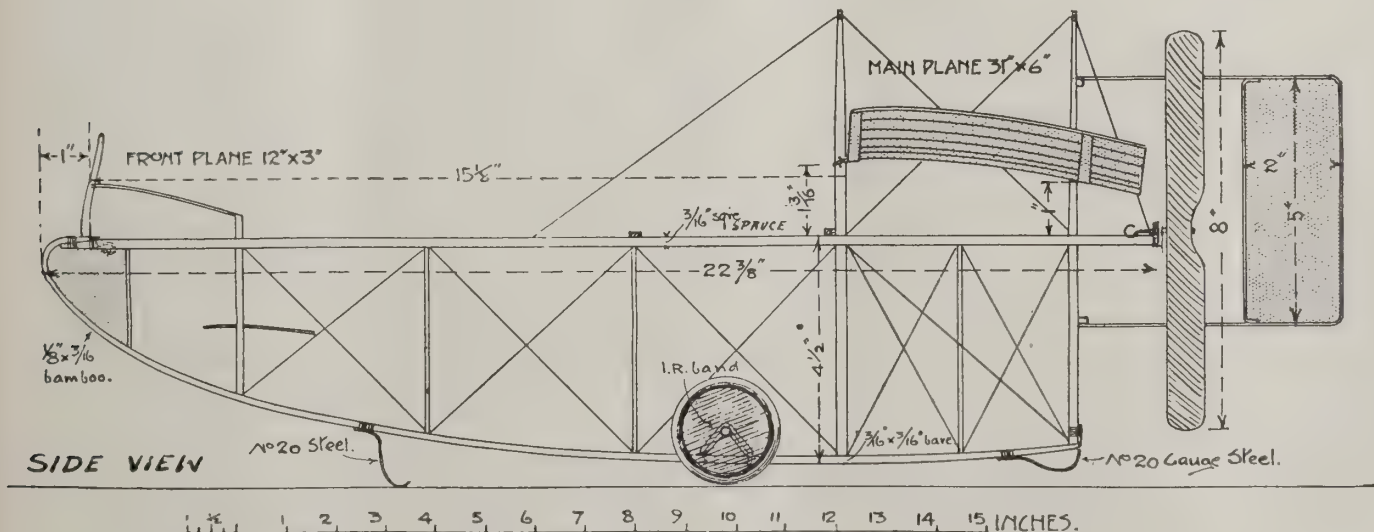
Top View Drawing of the Valkyrie Scale Model

### The Valkyrie Scale Model

As an example of one of the very few scale models which can be made to fly successfully without materially changing the balance is the model of the "Valkyrie" monoplane illustrated herewith.

The argument has been advanced that the Valkyrie monoplane was a freak, in that it resembled the so-called "canard" or front elevator models—but then it flew successfully, so surely nobody will be foolish enough to admit that it is such until one type rises pre-eminent above all others.

The accompanying very complete drawings show clearly the construction of the Valkyrie model, which may be varied slightly as long as the general dimensions are adhered to. The frames and planes may be constructed in the usual manner of spruce and bamboo. Propellers are cut opposite from regulation 8-inch model propeller blanks and the power is furnished by 1/8-inch flat rubber. Covering of planes may be either light silk or fibre paper coated with model varnish. The wheels are 2-inch diameter rubber tired streamline disc type to cut down head resistance.



Scale side view working drawing of the Valkyrie model. Construction is mainly of split bamboo and spruce, but can be varied to suit individual methods





Aeronitis is a pleasant, a decidedly infectious ailment, which makes its victims "flighty," mentally and physically. At times it has a pathologic, at times merely a psychologic foundation. It already has affected thousands: it will get the rest of the world in time. Its symptoms vary in each case and each victim has a different story to tell. When you find this column **you** may be infected, and may have a story all of your own. If so, your contribution will be welcomed by your fellow **aeronuts**. Initials of contributor will be printed when requested.

### A High Flyer

By Rena Cary Sheffield

If you're daft on aviation,  
Let some aeroplaneist know,  
And he'll take you off propelling  
Where the aviators go,  
Up beyond the Plerdes,  
Down the Milky Way,  
For a man's a born high flyer,  
So they say!

### Nothing Like This in Aviation

"Lots of things have been written about what a salesman must do to be successful, but I doubt if it was any book of rules that inspired the Goodyear salesman who recently put over a 'fast one' in Southern Illinois," says an official of The Goodyear Tire & Rubber Company.

"There was only one 'prospect' in the town—a combination undertaker-liveryman-automobile and accessory dealer. When the salesman called, the Protean business man, arrayed in overalls, was assembling an automobile engine—a rush job.

"I haven't time to talk to you," was his declaration. 'As soon as I get this engine together I've got to wash the hearse and beat it to a funeral. So don't delay me.'

"The salesman pondered a moment, then he asked: 'How long will it take to wash the hearse?'

"Forty-five minutes," was the brief reply, and he tightened a refractory nut.

"Well, if I wash the hearse will you give me the forty five minutes?" asked the salesman, shucking his coat.

"Sure thing," replied the dealer, for washing a hearse, this weather, is no joke.

"Mr. Salesman put on the rubber boots, took bucket, chamois and sponge and got busy,—and had the hearse shining brightly by the time the dealer had his auto motor assembled.

"Then they repaired to the office—and after a brisk session the Goodyear salesman left with a pair of red hands and an order for \$143 worth of accessories.

"Now this is a true story. And it is an example of the resources, energy and willingness of the men who make up an organization like that of The Goodyear Tire & Rubber Co. 'name given on request,' as the medicine ads say."

No aviator would give even a particle of time to such a tiny sum as \$143!

### Daedalus and Icarus

When Daedalus took flight from the tower of Minos' prison and winged his way over the blue Aegean sea, the fishermen who saw him were thrilled at heart and stood awed at the wondrous sight. The folks who did not see him but only heard of his exploit called the thing fool-hardy and pointing to the corpse of Icarus said:

"He essayed the empty air  
With wings not given to men—  
No task is too hard for mortals,  
In our folly we assail heaven itself,  
And our sacrilege forbids  
Angry Jove to lay aside his bolts."

So it has been of late years when the airmen winged their way across cities, lakes, countries and continents. Those who saw them were thrilled at heart by the consciousness that they have seen something extraordinary. On the other hand, those who only read or heard of the exploits pointed to the accident list and said: "Old terra firma is good enough for me," or "Had God intended that man should fly He would have given him wings," and similar expressions.

So it is to-day with the nations. Europe has seen her airmen fly high, fast and far, across countries and lakes and mountains and is thrilled at heart and her people acclaim it, her nations support it, her authorities praise it, her singers sing of it. It is a new element—subtle and penetrating, which reaches far into the very soul of the nation and is creating a new romance, new ideals and a new heroism. America, who has not witnessed that tremendous development, while not shaking its head, because it has seen some exceptional exploits, is only half convinced and points regretting to the Icaruses.



Young Martian — Oh, mommer! See the funny bird I caught. You can lift it right out of its wings.

—N. Y. World



(Continued from page 325)

edge of the forward hydroplane surface would interfere with this operation as well as increase the weight of the tail portion which is likewise undesirable in hydroaeroplanes.

I have found that the rear of the hydroplane surface of a hydroaeroplane should terminate in an edge and sufficiently close to the center of gravity of the machine, and the bottom of the tail of the boat from said point should be elevated rather abruptly above the hydroplane surface, to permit the proper longitudinal rocking of the machine about said rear extremity of the hydroplane as is desirable to get the boat up to speed and cause it to readily break from the water. In the embodiment of the invention shown this edge as stated is in the form of the rearwardly facing step 5 located approximately beneath the center of gravity of the machine, i. e., adjacent or close to a vertical line passing through the center of gravity and preferably at the rear thereof; and it will be observed likewise that this step is below the lifting air planes, in which position it gives more or less of an edge or a relatively short length of bottom surface to first strike the water and thus relieve shock when the boat takes the water at but a slight angle. The upper deck 7 of the boat also preferably inclines from the center downwardly toward the rear, and at the forward portion the upper deck is preferably stepped to form a cock-pit 8 for the operator. The hull of the boat is formed of rigid material such as wood or metal to withstand the water pressure, but above its forward part is provided with a hood 6 of fragile material such as canvas, supported on slat ribs 6a of thin wood or other easily yielding material to form the cock-pit 8 around the operator's seat. The hood 6 acts as a spray shield and its fragile nature allows it to collapse and prevent injury to the operator if he should be thrown violently forward due to any accident or sudden stopping of the machine. Behind the operator's seat may be carried the main fuel tank 98 for the engine 15, which preferably communicates with an upper auxiliary fuel tank 99 carried adjacent said engine through pipe 100 and pump 101 operated by said engine. The boat may also be provided with suitable water-tight compartments (not shown) behind the storage tank for increased buoyancy.

At the stern 3 of the boat is a suitable water rudder 9, preferably of rigid material carried on the pivoted rudder post 24, and beneath said rudder is preferably a projecting skegg 10 for protecting the same. Mounted above the water rudder and preferably upon the same post 24 therewith is the vertical air rudder 25 of lighter material, such as a canvas covered frame, for steering the machine to the right and left in the air. The air rudder 25 has an extension 26 forward of its pivot to partially balance the wind pressure thereon. The rudder wires 38 connected to each side of the rudder post at 40 and 41, lead forwardly and pass up through the pivot of hollow steering lever 35 as shown in Fig. 1. The machine is also preferably provided at its rear end with a fixed vertical stabilizing surface 20 and a fixed horizontal stabilizing surface 21 in front of the rudders, as shown in Figs. 1 and 3. At the rear of the horizontal surfaces 21 are mounted upon the pivotal shaft 23 two horizontal rudders 22 and 22a for steering the machine up and down. The upper and lower connecting wires 36, 37 respectively for these horizontal rudders lead forwardly and are fastened above and below the pivotal point of lever 35 as shown. The vertical rudder 25, horizontal rudders 22, 22a, fixed surfaces 20, 21, have to do with the controlling of the longitudinal stability of the machine and are therefore termed the longitudinal stabilizing devices as distinguished from the lateral equilibrium restoring devices hereinafter referred to.

The aeroplane attached above the boat in the present embodiment preferably consists of the superposed supporting planes as shown, and the lower plane 12 is preferably secured at its middle slightly above the upper deck of the boat and spreads outwardly therefrom in both directions at a slight upward angle so as to form a dihedral angle, as shown in Fig. 2. Mounted adjacent the lateral portions of each side of this lower plane, and preferably fixed to the wing tips thereof, are pontoons 27 of hollow construction and preferably shaped as shown in Figs. 6, 7 and 8, for the purpose of keeping the wing tips clear of the water when the machine is traveling thereon. Said pontoons 27 are formed with a downwardly inclined lower surface and also have trailing blades 28 fixed thereto for engaging the water when one side or the other of the aeroplane is depressed. The shape of these pontoons is such that they present very little wind resistance to the forward travel of the machine and at their upper sides they closely conform to the under curved surface of the lower plane 12 so as to form depending end surfaces for the wing tips. It has been found that this arrangement increases the lifting capacity of the plane by preventing the air from sliding off the ends of the supporting planes especially when said planes are arranged in a dihedral angle as shown. At the upper central portion of the aeroplane above the boat body are preferably mounted vertical surfaces 50 and 50a to offset the lateral resistance of said boat body to side currents of air and thus more perfectly balance the machine.

The aeroplane as shown is also preferably provided with equilibrium-restoring devices one at each lateral edge of the machine, and consisting in the present embodiment of ailerons 17 and 17a pivoted at 14b upon the rear posts 14a between the planes 11 and 12. The controlling wires 45 and 45a attached to the upper surface of each aileron lead respectively around suitable guides to opposite sides of the swinging shoulder frame 51, as shown in Figs. 1 and 3. The wire 44 connects the under side of both ailerons, whereby the shoulder frame when swung in either direction will throw the ailerons simultaneously to opposite angles of incidence for balancing the machine in flight, as is well understood. The upper supporting plane 11 is also preferably provided at each lateral edge thereof with a triangular panel 19, 19a supported on braces 18 and 18a, and having the rear corners thereof 105, 105a hooked downwardly to check the slipping of the supporting air past the same. This arrangement has been found to increase the lifting capacity of the upper plane.

The operation of the form of the invention shown in the drawings is as follows: When the machine is at rest on the water it is floated by both the forward and rear buoyant portions so that the tail portion increases the longitudinal stability of the machine on the water. When the machine is moving slowly through the water the bow rises and the tail sinks below its normal displacement, the elevated and upwardly inclined bottom of the tail permitting the tail to be more readily depressed with the tendency of the boat to rock rearwardly as it speeds up. As the boat increases in speed it commences to plane upward out of the water at a greater angle of inclination and when it attains sufficient speed to bring it well up out of the water, due to the forwardly projecting part of the boat beyond the center of gravity and the proximity of the step to the center of gravity, the boat is adapted to rock forward upon the forward hydroplaning surface and travel on the water supported from the water upon said surface with the tail of the boat well elevated. When the boat is thus planing on said hydroplane surface the head resistance is greatly decreased due to the decreased angle of inclination of the hydroplane surface to the water, the elevation of the tail portion and the decreased angle of incidence of the air planes so that the boat rapidly gains in speed to rise in the air, and, by means of the longitudinal aerial balancing planes, may be readily rocked rearwardly about the step 5 to a flying angle to rise from the water. Even if the bottom surface of the tail of the boat should not be substantially out of the water at this time, the height of the bottom surface of the tail above the rear extremity of the hydroplaning surface will permit this rocking movement without the rear of the tail engaging the water to an undesirable displacement; and if it should engage the water, its flat surface will prevent undue suction of the tail in the water such as would hold the machine in that position.

It will be obvious to those skilled in the art after understanding my invention, that various changes and modifications may be made in the embodiment of the invention shown without departing from the spirit or scope of my invention, and that the present description and drawings disclose merely a preferred form in which my invention may be carried out, and I aim in the appended claims to cover all such changes and modifications within the scope of my invention.

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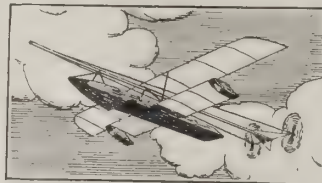
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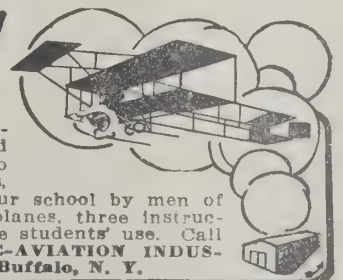
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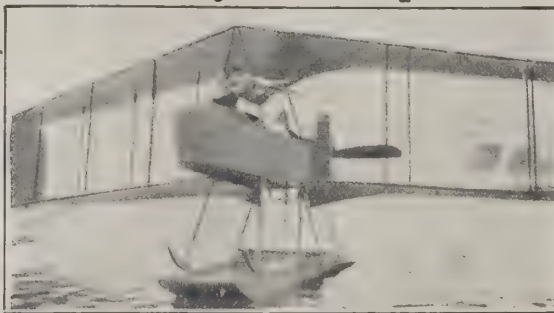


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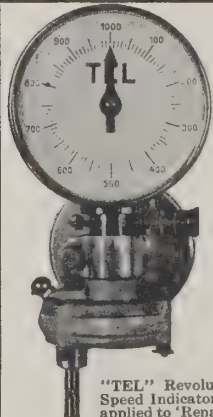
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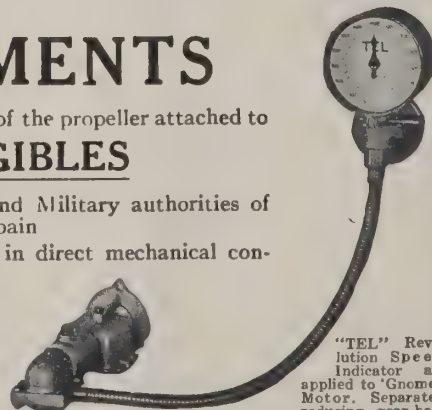
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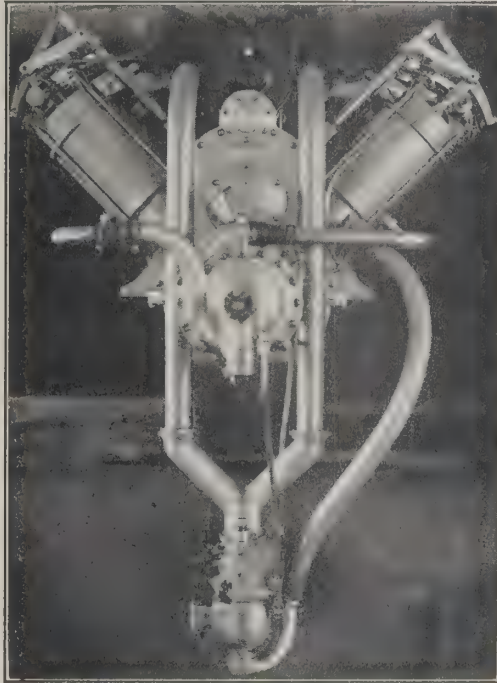


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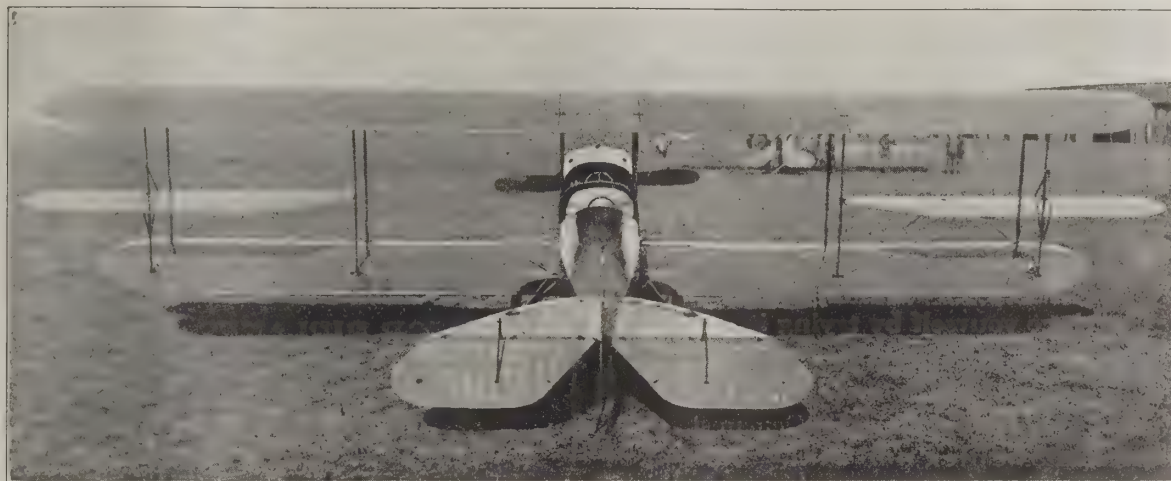
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SUBSCRIPTION RATES  
Domestic, \$4.00 per year  
Foreign, \$5.00

ADVERTISING RATES:  
One page \$80.00, Half \$45.00  
Quarter \$25.00, Eighth \$14.00  
Sixteen \$8.00.

Discounts: for 13 consecutive inser-  
tions, 10%; for 26 consecutive inser-  
tions, 15%; for 52 consecutive inser-  
tions, 17%.  
Cash discount, 3%, 10 days.  
For other rates see Classified  
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PUBLISHED WEEKLY BY THE AERIAL AGE COMPANY, Inc., 116 West 32nd Street, New York City

Entered as Second-Class Matter March 25, 1915, at the Post Office at New York, N. Y., under the Act of March 3, 1879

VOL. I. NEW YORK, June 28, 1915 No. 15

## Great Britain Has 2,500 Aeroplanes!

We stated in past numbers of *Aerial Age* that Great Britain was employing 16,000 men to turn out aeroplanes and motors and has ordered 400 machines in this country besides. The following dispatch to the New York *Sun* states that the British aeroplane fleet numbers 2,500 machines as follows:

LONDON, June 17.—Sky battles on a scale the world has never dreamed of will lend a new thrill to the European war spectacle before many weeks. Within the past six months aeroplane factories here and in the United States have been turning out scores of biplanes designed to give England supremacy in the skies.

Publication of this fact was not permitted until the formal announcement from the War Office in the House of Commons yesterday. It was learned to-day that the British air fleet now comprises 2,500 biplanes and monoplanes and about fifty dirigibles, all equipped for bomb hurling raids.

To challenge Great Britain's superiority in the skies German aeroplane and dirigible factories have been working overtime since last September.

Zeppelins have been turned out as rapidly as they could be manufactured at the Friedrichshafen factory, but the German Admiralty, according to reports received here, has placed less reliance in aeroplanes for battle purposes and now has less than 2,000 Taubes to meet the English attacks in the air. Many of these are in use along the Russian battlefield for scouting purposes.

Great Britain's fleet of 2,500 aeroplanes and seaplanes was created partly for defensive and partly for offensive action. Despite the admission from the Admiralty yesterday that forty persons were killed by Zeppelins in raids on the northeast coast on June 6 and June 15, it is the belief here that the aeroplane defence of London and other large cities is so nearly perfect that the Zeppelins will never be able to reach the central districts.

While part of the nation's air forces will continue to patrol the coast to meet German dirigibles, it is understood here that several flotillas are shortly to join the French, who have been making successful raids on German ammunition factories and chemical works. Despatches received here to-day said that several ammunition factories at Karlsruhe were damaged in the recent French raid and that more than two hundred persons were killed, including a number of guards at the ammunition works.

The Russian Sikorsky biplane, after which some of the new English machines are reported to be modelled, has done heavy damage along the German front in Poland. Because of its size and its capacity for carrying explosives, the Russians have named it after a fabulous Russian giant.

Another despatch makes public the fact that one of the large land machines is being built by the Curtiss Aeroplane and Motor Company, of Toronto, Canada. This machine is to be equipped with two Curtiss motors of 160 h.p.

## United States Army and Navy Have Only Eleven Aeroplanes

As a pitiful contrast we find that the U. S. Army and Navy have together only eleven aeroplanes. The Navy has four at Pensacola, with "two more ordered and three to be purchased soon." By the time these are delivered the four machines at Pensacola may be worn out, as there are a dozen men training daily with them.

The Army has seven machines in commission—and eight ordered. But the seven are wearing out, and may have to be condemned and dropped from the records.

And there is no relief until Congress reconvenes—and then there may not be much relief. The Army and Navy need each \$5,000,000 for aeronautics "to give them a start," as the New York *Sun* puts it.

## Congressmen Fitzgerald and Mann Pursued by Nemesis of Their Own Making

Congressmen John J. Fitzgerald, of Brooklyn, N. Y., and James R. Mann, of Chicago, Ill., are being pursued by a Nemesis of their own making. They "played politics" in the past few years and are largely responsible for our military unpreparedness, having reduced all military appropriations to a minimum.

Whenever their names are mentioned people say: "Weren't they responsible for cutting down this or that appropriation?"

Congressman Fitzgerald's biggest Nemesis is that contemptuous expression of his at the last session, when he tried to reduce the appropriation for Navy aeronautics to \$300,000 and he was asked whether he had read the recommendation of the General Board of the Navy, which asked for an appropriation of \$5,000,000 for Naval Aeronautics. Mr. Fitzgerald replied:

"I did, and that is the reason I pay so little attention to their recommendations."

It is quite possible that Mr. Fitzgerald is still obsessed with false ideas regarding the power invested in the position in which he has been placed by the people. If he is, his Nemesis will attend to him. The people of the United States are decided to prevent further endangering of national security by politicians.

Mr. Mann's Nemesis has already castigated the gentleman. The presidential boom was promptly nipped at the start and is now dead forever. Any other move to boom Mr. Mann will meet a similar fate. And as the Illinois Senate has adopted a resolution calling on Illinois' representatives in Congress to adopt a stronger naval policy, Mr. Mann must either reform or retire.



### Absurd Criticisms

"The aeroplane has not proven its value for offensive," is a remark in which some military authorities who should know better indulge rather frequently.

We will not attempt to enumerate the hundreds of raids made with aeroplane fleets numbering between ten and sixty aeroplanes and give the details of the attack and destruction by aeroplanes of railroads, naval and aeronautical bases, forts and bridges. It would require many times twenty pages to give such a report.

But it may be pointed out that the fact that the number of air raids is increasing is evidence that they must be effective. Those who claim otherwise presume to know more than the authorities who direct the war—and that is absurd!

### Too Few Aviators—Cannot Afford to Lose Them

"A United States military and naval aerial corps does not exist. Therefore those American aviators who would have to make up our volunteer service in case of emergency should be restrained by patriotism from risking their lives in looping-the-loop, flying upside down and other daredevil feats. There are too few of our airmen already."—The New York Sun's comments on Niles' looping-the-loop with Steve McGordon as passenger.

### Imperative Need of Training Airmen

(Boston, Mass. Transcript)

In no line of military preparation is the United States more deficient than in its air arm. And the chief difficulty is one which cannot be quickly overcome. We might conceivably supply ourselves rapidly with aeroplanes, but where would we get the pilots to operate them and the observers capable of rendering them of value? It takes something like six months to turn out a first-class operator, and competent observers could hardly be trained in less time. What, therefore, could America accomplish in the air if she were called upon to encounter war at the present time?

But in spite of the fact that the United States is facing the most serious crisis in years, the War and Navy departments are pursuing their tranquil way, not a ripple being apparent on the surface. The Navy has not one first-class war aeroplane, according to the testimony of Admiral Fiske the other night at the Annapolis graduates' banquet. Not only this, but there are only three such craft on order, and the Navy will not secure them, unless the present attitude is greatly changed, until some time along in the latter part of the summer. Nor does this appear to cause any disquiet on the part of the high authorities to whom are entrusted the safety of this nation of 100,000,000 souls.

Neither is the Army much better off. So far as the land machines available for war are concerned, the number may be counted on the fingers of both hands. There are nineteen officers trained and training for pilots and observers. This is about one-third of the total that Britain is now turning out each month. The situation as regards personnel is virtually the same in the Navy.

It is difficult to comment on these conditions with restraint. Everyone who has the slightest acquaintance with the events across the water knows that aircraft are indispensable to the successful conduct of military operations of every kind. Funds are at hand for increasing the strength of both the Army and Navy flying forces. Only the push from above, essential before the wheels of progress can move, is lacking. Immediate action is imperative, and the heads of the War and Navy departments should be made to feel the pressure of an aroused public opinion.

### Aero Branch of the Army Should be Pushed to the Limit

The present war seems pretty clearly to have demonstrated the supremacy of the aeroplane over the Zeppelin for all around

purposes. While the Germans continue to manufacture the Zeppelins they are also augmenting their force of heavier than air machines. Naturally there is an advantage in having both.

A military expert is authority for the opinion that the usefulness of the German dirigible has practically reached its limit. Its value in war is restricted to the night. It has the advantage of being able to carry greater weight. The Zeppelin can do more damage in attacking an open town because of the large supply of bombs it carries and the number of men to direct the fire.

On the other hand it must give way to the aeroplane when it comes to reconnaissance, daylight bombardment, and the regulation of artillery fire. The aeroplane is far less vulnerable and can regulate its movements much more easily. The possibilities of the heavier than air craft are in their infancy. The present war will be the means of bringing out many of the improvements that are bound to come. Trans-Atlantic flights will be the first thing attempted when the war is over. Ability to rise quickly and the power to carry more weight are two problems that must be worked out.

The United States government is far behind Europe in the matter of aircraft. The aero branch of the army ought to be pushed to the limit because of the commercial benefits that are to be derived from the perfection of the aeroplane. Des Moines Capital.

### A Rational Method of Determining the Commercial Utility of an Aeroplane

For practical work, the object of an aeroplane is to carry a useful load from one place to another. This is done at the expense of fuel and oil. For commercial reasons it is desirable that an aeroplane should carry its useful load a given distance at the expense of the least possible fuel and oil. Some means should be standardized for comparing various aeroplanes on this basis, and the following is a good suggestion:

For the work done by an aeroplane, borrow a term well known in commercial transportation: the "ton-mile." This is simply the useful load carried in tons, multiplied by the number of miles it is carried. If this "ton-miles" be divided by the number of gallons of fuel and oil consumed at the same time, a new term will result which may be called "ton-miles-per-gallon."

By useful load is meant the total weight of pilot, passengers and anything not necessary for the actual flying of the machine, such as luggage, arms, ammunition, etc.

#### EXAMPLE:

On a trial flight an aeroplane carried:

Pilot, who weighed	150 lbs.
Passenger, who weighed	190 lbs.
Bombs, which weighed	260 lbs.
Total load	600 lbs.
Distance covered	60 miles
Gasoline consumed	6 gals.
Lubricating oil consumed	1.5 gals.
Total	7.5 gals.
Ton-miles-per-gallon = $\frac{600 \times 60}{2000 \times 7.5} = 2.4$	

At the present time anybody can build a machine which will fly provided it has enough power, but it takes real skill to build a machine which will require but little power, and yet make speed.

### Phenomena of the Air

(From the N. Y. Times Mid-Week Pictorial)

A member of the British Naval Air Service who is photographing Turkish positions at the Dardanelles has made some observations on the phenomena he encounters. While on tours of reconnaissance in "an old hydroaeroplane that staggers in the breeze like a Dutch lugger" he has noticed that at the altitude of a few hundred feet above the water he can see, on a sun-lit day, the white sands at the bottom and even detect wrecks of small boats and mines which he has tried in vain to detonate with his machine gun. Another equally interesting phenomenon he describes as follows:

"After the height of about 6,000 feet is reached there is very little difference between that and 12,000 feet, and after the first 6,000 feet it would take a very practiced observer to tell if he were at that height or double that height. One can see everything perfectly clear. The other day one of the observers took a lot of photos at 11,500 feet, thinking he was about 6,000 feet, and they came out very clearly."



# THE NEWS OF THE WEEK

## Curtiss Building Mammoth Machines for England

According to an announcement made Wednesday, June 15th, in the House of Commons, London, Great Britain is developing a larger and more powerful aeroplane for offensive purposes which is being constructed in this country by Glenn H. Curtiss. The aeroplane, a land biplane of 320 horsepower, is in course of construction at the new factory recently built by Mr. Curtiss in Toronto, Ont.

The previous successful experience of Glenn H. Curtiss in producing the *America* for Mr. Rodman Wanamaker, and the usefulness of this machine when sold to the British Admiralty, with a dozen others of the same type, caused the selection of Mr. Curtiss for the work. The construction is being closely watched by the members of the British Military Flying Commission, who include Captain W. L. Elder, R. N.; Lieutenant H. R. Busteed, of the Royal Naval Air Service, and Captain Jenkins, of the Royal Flying Corps. These officers are now in America.

In addition to the officers, Dr. Albert F. Zahm, recorder of the aerodynamic laboratory of the Smithsonian Institution, in Washington, has been employed on behalf of the constructors to watch the construction of the big machine. Mr. Curtiss also has employed to aid in the work Anthony Jannus, of Baltimore, well known aviator and builder of aeroplanes. Mr. Jannus flew 1,900 miles down the Mississippi in 1912.

It is learned that the lines of the big biplane will be much like those of the *America* so far as the wings are concerned. These were designed originally by Mr. Douglas Thomas, a young Englishman, now associated with Thomas Brothers Aeroplane Co. of Ithaca, N. Y. They will spread wider than the *America's* wings, however, being designed to carry large loads of explosives and fuel.

The giant aeroplane is expected to have a spread of nearly one hundred feet, as compared to 72 feet in the Wanamaker flying boat. Its power will be supplied by two engines of 160 horsepower, instead of the 100 horsepower motors used in the *America*. These will add about 350 to 400 pounds weight, but this will be more than made up by dropping the heavy boat and substituting a landing chassis.

It is estimated the new craft will lift at least 700 pounds more than the *America*. The latter, it is understood, recently ascended 6,000 feet in thirty-five minutes with a load of 1,200 pounds.

## Jack Vilas Flying in the Wilderness with His Curtiss Flying Boat

L. A. Vilas, the well-known Curtiss flying boat operator, is permanently located at Trout Lake, Wisconsin, with his Curtiss flying boat L. A. VII. He has with him Alton Hoover, who was his mechanic last season. Trout Lake, where Mr. Verplanck is flying, is about the wildest place a flying boat has ever been in. He states:—"Flying here in the wilderness is very interesting as the few people that are here are guides and Indians whose closest realization of an aeroplane has been a dream. While flying recently, at an altitude of about 1,500 feet with Mrs. Vilas, she counted 20 different lakes, so one can get an idea of what a beautiful view is obtained from a small altitude."

## Heinrich Tractor Sets New Passenger Altitude Record

At the Garden City Aerodrome on June 20th, a new American altitude record was established when Stevenson MacGordon with Arthur Heinrich, vice-president of the Heinrich Aeroplane Company, and R. F. Mitchell, of Freeport, as passengers, reached a height of 6,496 feet.

MacGordon's feat was accomplished in the new Heinrich military tractor biplane with a 110-horsepower, 9-cylinder, air-cooled Gyro engine. The total weight of the aviator and his two passengers was 429 pounds.

## Jannus Brothers to Establish Aeroplane Plant in Toledo

The Jannus Brothers will remove their aeroplane plant from Baltimore to Toledo. This was decided recently when Tony Jannus visited Toledo and inspected many sites. The reason the Jannus Brothers have selected Toledo as the location for their factory is because Tony Jannus considers Toledo conditions ideal both for manufacturing purposes and for flying. Jannus said he was particularly impressed with Maumee bay, which offered ideal opportunities for an aviation school which the Jannus Brothers intend to conduct in Toledo in connection with their manufacturing business. The firm will conduct regular classes in aviation and during the resort season will have two or three hydroaeroplanes at Toledo Beach for exhibition and passenger service.

The new factory will be established in a few weeks.

## Wright-Curtiss Suit Postponed

The long standing patent litigation between The Wright Company of Dayton, O. and The Curtiss Aeroplane Co. of Buffalo, came before Judge John R. Hazel, in United States District Court on June 21st and was again adjourned at the request of the Wright Company. Attorney H. A. Toulmin, representing the Wright Company, said he was not prepared to go on with the case and asked that it be put over until November 3rd.

## Niles Loops the Loop Carrying Stevenson MacGordon

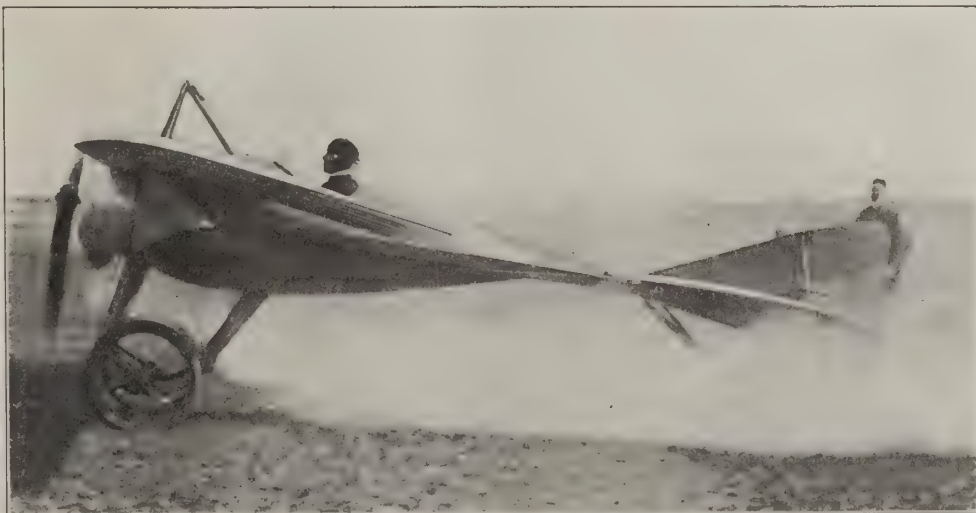
With Stevenson MacGordon as passenger, Charles Niles exceeded all his former spectacular feats when at the Garden City aerodrome on June 16th, he flew upside down four times, and looped the loop twice, 800 feet above the ground.

Niles had planned to do his stunts 3,000 feet high, but heavy clouds banked 1,000 feet above the surface would have shut him off from view. Both loops were made within a space of 200 feet.

Niles used a special two-seater Bleriot monoplane, built by Harold Kantner, constructor for the Huntington Aircraft Company, equipped with a 90 h.p. Gyro motor.

Speaking of his experience, MacGordon, who is pilot of the Mayo biplane, said: "I lost all sense of direction. I could not tell what part of the field we were over, nor just whether the ground was under me or over me. The worst part was the upside down flying. I did not mind the loop so much. The sensa-

The trim, speedy Schmitt monoplane at the start of a flight, Millman pilot. Mr. Maximilian Schmitt has offered the use of one of his aeroplanes and the services of his pilot to the Militia of New Jersey





tion in the loop is not different from what I felt when I looped in the little car at Coney Island several years ago, except that in the aeroplane there is less centrifugal force because the loop is larger and the machine is not travelling so fast."

When the machine was upside down MacGordon was hanging by the shoulder straps four inches from the seat, his knees jammed against the gasoline tank. In spite of Nile's warning he had not buckled the straps tight enough.

About 3 o'clock in the afternoon when he began the performance by dropping out of the cloud MacGordon was strapped in tight so that the upside down part was not so hazardous for him. They flew more than a mile with their heads toward the handful of spectators and did three more loops and a tail slide.

Niles did not try to spare his passenger's feelings this time. He plunged and darted through the air with the same careful recklessness that has made him famous. At last just for the sport of doing it he climbed 1,800 feet, sailed levelled out over a cloud at the end of the field, plainly visible from the hangars, and dropped 1,000 feet down into the cloud and out through the bottom. Then he levelled the machine and volplaned in.

#### Gray Flies 25 Miles Cross-Country

George Gray, who has been making demonstration flights at Atlantic Beach, Fla., for several weeks past, made a cross-country flight from there to Fernandina on June 10th, covering the distance of twenty-five miles in twenty-seven minutes.

Gray started his flight from the Atlantic Beach Hotel at 10:29 A. M. and reached Fernandina at 11:16 o'clock.

The flight was made in connection with the formal opening of the Keystone Hotel, under the management of Roy A. Tolbert.

#### Steamer Cymric Sails With Twelve Aeroplanes Aboard

The White Star liner Cymric sailed at 1 o'clock on the afternoon of June 18th for Liverpool. She was delayed an hour to take on board a big aeroplane which was sent alongside in a steam lighter at the last minute. Five aeroplanes were stowed in the hatches forward and built in with beams, and seven more of the machines were stowed in big wooden cases on the after decks.

#### Thompson and Oldfield Thrill Chicago

DeLloyd Thompson and Barney Oldfield thrilled Chicago with their combined aeroplane and auto exhibition on June 13th.

While Oldfield was attempting to establish new records, DeLloyd Thompson gave the 20,000 spectators assembled at the Maywood speedway a treat which they are not likely to forget in a great while.

Speed on the track is something that is getting to be a regular dish with the dyed-in-the-wool lover of thrills, but when DeLloyd Thompson does what is known as the tumble that is something else again. The tumble as executed by Thompson is more of a thriller than the loop-the-loop, and with his flights at Chicago Thompson gave many a spectator a heart catch as he flopped his biplane side over side and changed from the tumble into upside down flying and the loop.

#### Thomas to Deliver One Machine a Day

Behind closed gates and locked doors a small army of men at the Thomas plant are busily engaged making the new Thomas Military Tractors which have gained wide international attention.

Two months ago, when the representatives of a great government abroad recognized the desirability of purchasing some of these machines for their government, the Thomas Bros. hesitated to accept a large order with specific "rush" clauses. They accepted the contract reluctantly to furnish a number of machines within a given time. To-day they are, as it were, breaking the speed limit in furnishing machines much more promptly than asked for in their contract, and increasing the capacity of their plant by over a hundred times.

It is even stated that this company will soon be able to turn out, on the average, a machine for every working day. They have done what heretofore was scarcely possible to do—so standardized the product and the parts in manufacturing as to have produced an almost phenomenal efficiency.

The plant is divided into eight departments. At the head of each is an expert, closely scrutinizing the work of each of his men, but not satisfied that his supervision and his passing on work are not in any way biased, a special inspector carefully examines and criticizes each and every part, the construction and the placing of each one of the thousand and one parts that go to make up the Thomas Military Tractor.

Seven of the twenty-four machines, which were ordered by a foreign government a few weeks ago, have been tested and delivered. The rest of the order is in process of construction and will soon be ready for shipment.

In the meantime, this company is being approached to provide similar machines of this same type to other governments which have recognized its efficiency and advantages.

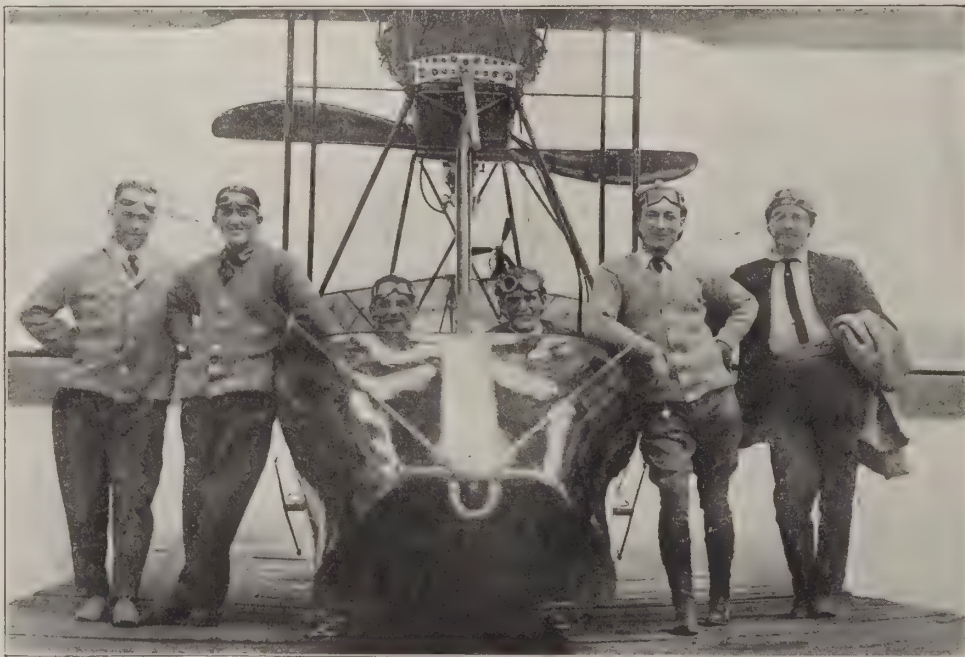
This Thomas Military Tractor is a modern marvel. Speed variation, stability and the ease with which it is operated and manipulated, make it valuable for scouting purposes and carrying moderate loads. It can attain dizzy heights at a speed in excess of the governmental demands and can go at a speed as low as 38 miles per hour. It alights easily and has a natural, bird-like, inherent stability.

The erection of the new hangars; the long lease which they were able to obtain for a straight-away, and the excellent facilities over Cayuga Lake for Flying Boats and Hydroplanes give the Thomas School of Aviation splendid facilities.

Elmer A. Sperry, who, with his son, invented the Sperry aeroplane stabilizer, which he is now testing out for the United States Government, was elected President of the New York Electrical Society at its annual meeting.

The Viscount Mauduit de Kervern, the young French airman who had come to this country to recover from a bad injury he received in the War, has had to depart hurriedly for France upon receipt of a cable telling of his father having been wounded, too.

The Viscount expects to be back here in two months, when he will complete the highly original tabloid biplane he started to build at the Cooper Aircraft Co., of Bridgeport, Conn.



Mr. Robert Glendinning, the Philadelphia sportsman, and Walter Johnson, the instructor of the Curtiss Hammondsport School, in Mr. Glendinning's Flying Boat, with four other students



### Military Aviation News

Second Lieutenants Edgar S. Correll, 30th Infantry, Henry W. Harms, 9th Cavalry, and Ira A. Rader, 22nd Infantry, have completed tests for pilots' license.

Second Lieutenant Harry Gantz, 23rd Infantry, is undergoing the test at this time.

Second Lieutenants Leslie MacDill, Coast Artillery Corps and Arthur R. Christie, Infantry, are expected to commence Junior Military Aviator tests in a few days.

Lieutenant Herbert A. Dargue, Signal Corps, has reported from leave.

Lieut. Thomas S. Bowen, Signal Corps, has left for a visit to his home in Kentucky.

The marriage of Mr. Raymund V. Morris, Chief Pilot of the California Curtiss Company at North Island to Miss Grace Gibson of San Francisco will take place this summer at Coronado.

Mr. Oscar A. Brindley, civilian pilot attached to the school, has gone East for a brief leave.

### Two Killed When Jones Falls at Squantum

One of the most regrettable accidents which has occurred in some time happened on June 18th when the 80 h.p. Sturtevant motored tractor biplane in which Harry M. Jones and two passengers were flying, fell at the Squantum field, killing both the passengers and seriously injuring the pilot.

The accident is all the more regrettable because it was so unnecessary, and can only be attributed to the fact that Jones was using a set of wings designed for a 45-mile-an-hour machine, which were known to be unsafe on faster machines.

The truth of this assertion seems to be borne out in the following explanation of the accident received from Mr. A. F. Graham, Jr., who interviewed Mr. Jones at the hospital two days after the accident. He says:—

"Mr. Jones has now sufficiently recovered to have recollection of the unfortunate incident. He gave Mr. Joe Toye, his manager, and myself a brief explanation during the few minutes we were allowed to see him at the hospital.

"He says that it was not a good flying day, the atmosphere being noticeably rare and the machine did not have the same lifting ability as it had on other occasions although the motor was up to speed. He was attempting to carry an unusual load for the purpose of determining the maximum lifting capacity of his machine. It was necessary to make two attempts before getting off the ground and the machine climbed very slowly on a straightaway flight for a distance of about one-half mile from the field. When over the Pope farm at Squantum he started to turn to the left and return to the aviation field but the machine dropped rapidly on the turn and was seen to wobble considerably. Mr. Jones explains that he did this in an attempt to make his machine rise on the turn. Finding that he was unsuccessful he nosed the machine down for quick landing on the only suitable spot in the vicinity which was 75 ft. below and directly beneath him at the time. The machine continued in this dive until it struck the ground on a hillside and overturned.

"Mr. Jones has no recollection of the happenings during the few seconds following his decision to make a hasty landing. Witness state, however, that the machine appeared to be coming out of the dive and expressed the belief that if he had been at a higher altitude he would have made a successful landing.

"Mr. Jones either misjudged the distance or when he nosed the machine down the two passengers, one of whom was sitting on the other's lap, were thrown forward in the cockpit which threw the centre of gravity of the machine so far forward that it would not respond to the controls as readily as the operator had been accustomed to."

The aeroplane was inspected immediately after the accident by Mr. George H. Armitage, of Providence, who is an intimate



*R. M. Rinehart, Chief Instructor at the Wright School,  
Dayton, Ohio*

friend of Mr. Jones, and who has assisted him in the construction of several machines, including this one. He has made several cross-country flights with Mr. Jones during the past few weeks and was very familiar with the action of this machine in the air. Mr. Armitage states that the control wires were all intact and the only broken wire was one of the cross wires between the skids and he believes that the accident was caused by no failure of the machine. He further says that the motor was running at the time the machine struck the ground which is proven beyond a doubt by the fact that no piece of the propeller was to be found more than 6 inches long, the two blades having been shattered into fragments. It is also his opinion that if the aeroplane had not overturned the accident would not have been serious.

Great sympathy is felt for Mr. Jones in this sudden termination of his plans for the summer. He had started a school at Squantum and since finishing his machine on June 1st he had made over thirty flights, the two most prominent being a flight with a passenger at a high altitude over the City of Boston on June 10th and from Boston to Providence and return on June 16th, a distance of 90 miles. He never indulged in spectacular stunts, his bent being 'straight' flying and all who knew him were impressed with the great care which he exercised. He is recovering rapidly and expects to leave the hospital within a few days.

In reference to Mr. Noble Foss' connection with the design of the machine it should be explained that this was confined to the motor only, which was a six-cylinder 80 H.P. Sturtevant engine built by the B. F. Sturtevant Co., with which Mr. Foss is connected. The aeroplane was designed and constructed jointly by Mr. Fred S. Channonhouse, of Quincy, Mass., and Mr. Jones, and was a tractor biplane with the Wright wing surface and warping control.

*Harry M. Jones'  
Tractor Biplane at  
Quincy, Mass.*





## AEROPLANE ENGINES\*

By Neil MacCoull, M. E.

**L**UBRICATION is another factor on which the reliability of an engine is dependent, and it is receiving more and more attention from designers. It is probably the one point on which the success or failure of a heavily worked engine hinges more than anything else. One of the improvements in lubricating systems which is gaining favor at present is that of cooling the oil after it has been used once, and before using it a second time. The reason for this is that oil apparently deteriorates upon prolonged exposure to heat, causing a falling off of the power of an engine because of inferior lubrication. An example of this is shown by the following curve of an "80" Gnome (Fig. 1).

As a result of general observation many people consider that the more closely a design adheres to standard automobile types, the greater its reliability. This is probably because such designs have borrowed from the automobile many details which were learned from long and costly experience, but it does not mean that other types, such as radial or revolving, may not become just as reliable after sufficient development. There is no fundamental reason why the vertical or V-type engine should be more reliable than any other.

## Fuel Economy

An aeroplane engine must, of course, be as economical as possible of both fuel and oil. Fuel economy implies a high compression, since efficiency rises with the compression ratio; and careful workmanship, so as to eliminate any unnecessary friction.

For any particular type of engine there are three places to look for a possibility of improved efficiency: The carbureter, gas passages, and ignition system. These are facts well known to automobile engineers and have been the cause of much research, the results of which would tend to make one look with suspicion upon the long unjacketed manifolds used on some aeroplane engines.

For very high engine speeds it has been proved that the number and location of the spark plugs has an appreciable effect upon efficiency. When two-point ignition is used, failure of one of the plugs must be guarded against because it will not cause missing and therefore may not be detected. Since two-point ignition requires a smaller angle of advance than the single-point, the failure of one plug will cause late ignition in its cylinder, with its resultant heating and lowered efficiency.

At present the magneto reigns supreme for the ignition of aeroplane engines, but it may be replaced soon by some of the well-known battery systems, because of the increasing necessity for an electric generator for wireless outfits, searchlights, stabilizers, etc.

## Engine Weight

It almost goes without saying that any unnecessary weight on an aeroplane engine must be eliminated, and that no part should be any heavier than it must be to safely resist deflection or rupture. Some designers are so anxious for a light engine that they unfortunately pare down too much on vital parts, including bearings.

There are, however, three other factors which determine weight: method of cooling, piston speed, and cylinder arrangement.

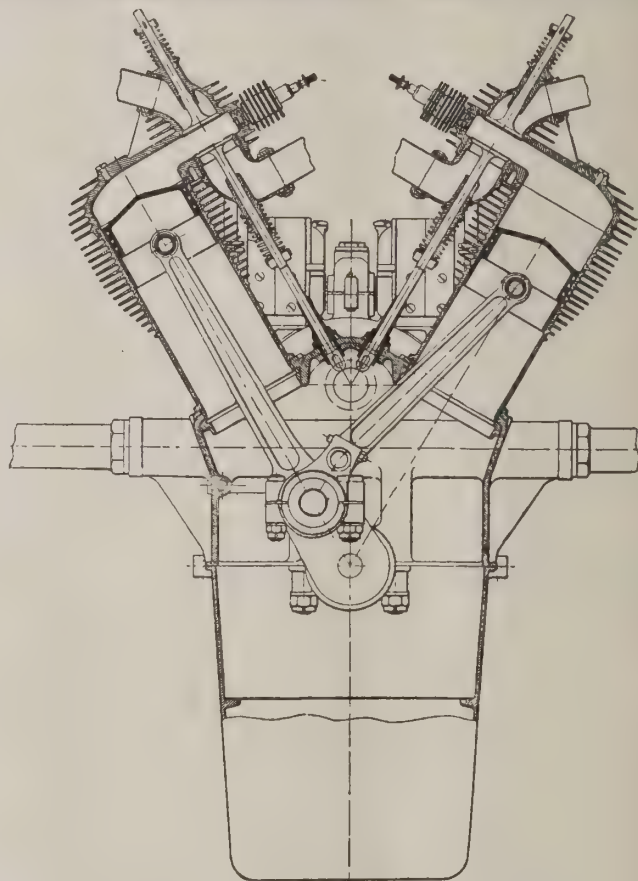
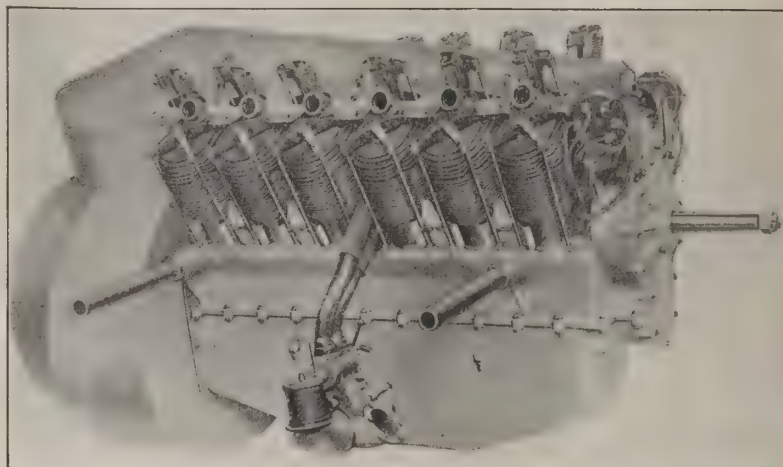


Fig. 41.—Side View and Cross-Section of the 100 H. P. Renault

## AIR-VERSUS WATER-COOLING

The same arguments of simplicity and light weight which are so well known to automobile engineers, are again revived in regard to air-cooled aeroplane engines. In spite of the fact that one American manufacturer has made an undisputed success of an air-cooled automobile engine, there seems to be but little tendency for others to follow his lead. The heavy duty required of the aeroplane engine, and the necessity for high power, increase the difficulties of air-cooling. For engines with revolving cylinders this form of cooling is almost essential because of the difficulty of making water connections. It limits, however, the size of the cylinders which can be cooled satisfactorily and large piston area can be secured only by a multiplicity of cylinders. Vertical and V-type engines must, of course, have a forced air draft, but this decreases the simplicity of this system.

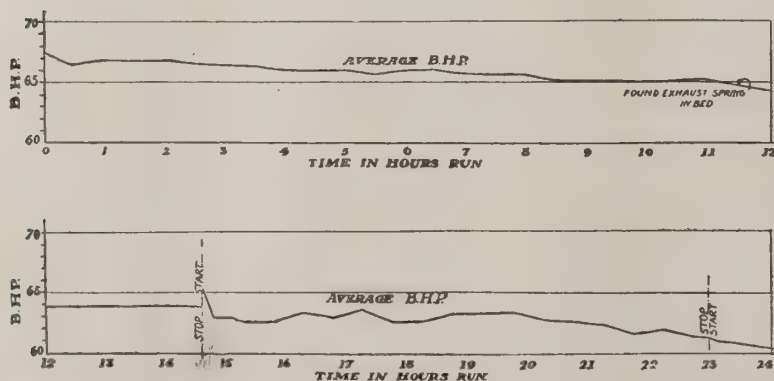


Fig. 1—Power Curve of the First British Built 80 H. P. Gnome. The r. p. m. was about 1100, which is less than rated

\*Continued from Page 323, June 21, 1915



The combination of air-cooling for the cylinders and water-cooling for the heads and valves, as used on the Wolseley 90 horsepower engine, is an interesting compromise which gives the reliable cooling of water, and yet saves much of the weight of the usual water-cooled system.

### HIGH PISTON SPEEDS

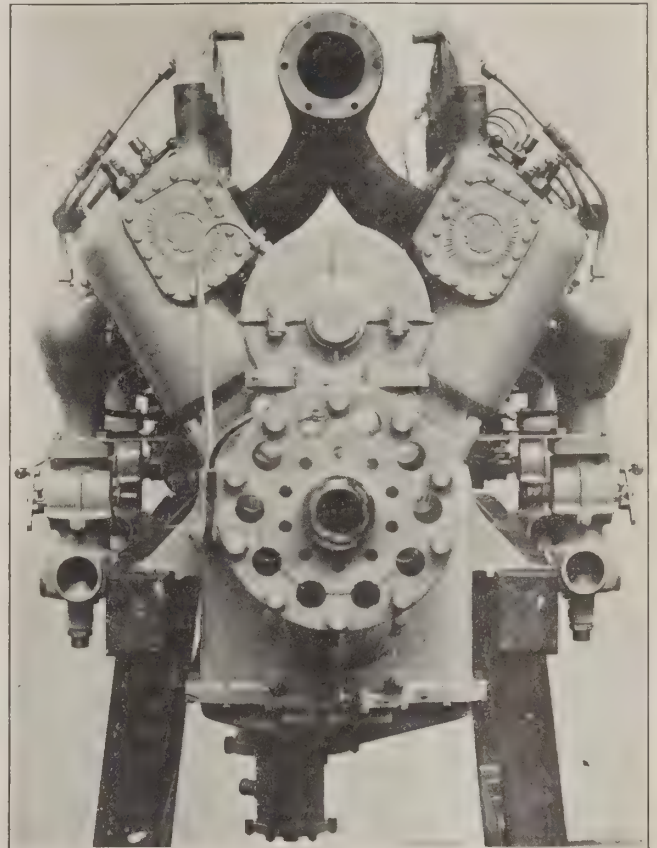
The power developed by any engine increases at the same rate as the piston speed, provided the valve area is increased also so that the m. e. p. will be unchanged. In other words, doubling the piston speed of an engine will double its power and hence cut the weight per horsepower in half. When speeds much higher than those used at present are attempted, many difficulties arise which are of such a serious nature that many engineers refuse to have anything to do with a high-speed engine. However, such a considerable weight reduction is, possible by the use of high speeds that it is thoroughly worth while to investigate the factors which limit the satisfactory speed of an engine, and see what can be done to minimize their influences.

### Valve Action

Undoubtedly the most prolific source of trouble when high speeds are attempted, is the valves and their mechanism. When one considers that with the possible exception of ignition, they are the most unreliable parts of an engine even at the speeds normally employed, and that their hammering action increases as the square of the speed, it can be appreciated that all possible means should be taken to reduce the forces involved as far as possible; this being particularly difficult with the high-speed engine because the size and hence the weight of a valve for a given cylinder diameter must be increased as the piston speed is raised in order that the volumetric efficiency be not sacrificed.

The first step to take in this direction is to eliminate the overhead valve which is operated by rocker arms and long push-rods from a camshaft located at some distance from the valves. In order to do this either an L-head should be adopted, as in the case of the Sturtevant and Sunbeam, or an overhead camshaft as in the case of the Mercedes and Green. It is claimed that the latter construction gives a higher m. e. p. than the former and is less liable to cause trouble from warped cylinders because of uneven expansion, but it is certainly more complicated.

Whichever construction is adopted, the valve forces will be reduced materially by a high stroke-bore ratio. The time taken to open and close the valves will increase as the r. p. m. is decreased, and a long-stroke engine has of course a lower r. p. m. for a given piston speed than a short-stroke engine. The longer the period taken to open a valve, the less its acceleration, and hence the less the force required to operate it. It is possible to make a



225 H.P. Twelve-Cylinder Sunbeam-Coatalen. It is equipped with four carburetors

further reduction of valve forces by reducing the size of the valves and increasing their number so as to maintain the same port area. As an example, consider a single cylinder with one intake valve in one case, and a similar cylinder with four valves, each of half the diameter, in the second case. The total valve area in both cases will be identical, since area varies with the square of the diameter, but the weight of the single valve will be eight times the weight of the smaller valve, since weight varies with the cube of the diameter. Also, the large valve will have to lift twice as far as the smaller in order to get its maximum port area; hence the acceleration will be twice as great. Any force may be measured by the product of weight and acceleration; thus the forces involved with a single valve will be sixteen times as great as with any one of four valves each of half the diameter of the former. It is easy to understand why two intake and two exhaust valves are used for each cylinder of the Sturtevant "E-4" and Curtiss "V" engines.

Increasing the number of cylinders has a similar effect on the valve action to that of increasing the number of valves per cylinder, because as the number of cylinders increases, the size of the cylinders and valves decreases if their total areas are to remain constant, as they must for equal power at equal piston speeds. With the smaller cylinders the smaller strokes (for equal stroke-bore ratio) will require a higher r. p. m. for the same piston speed, and thus the valve action will be more rapid. There will still be however a considerable reduction of the valve forces, as shown by the fact that doubling the number of cylinders decreases the forces on each valve about 65 per cent.

(To Be Continued)

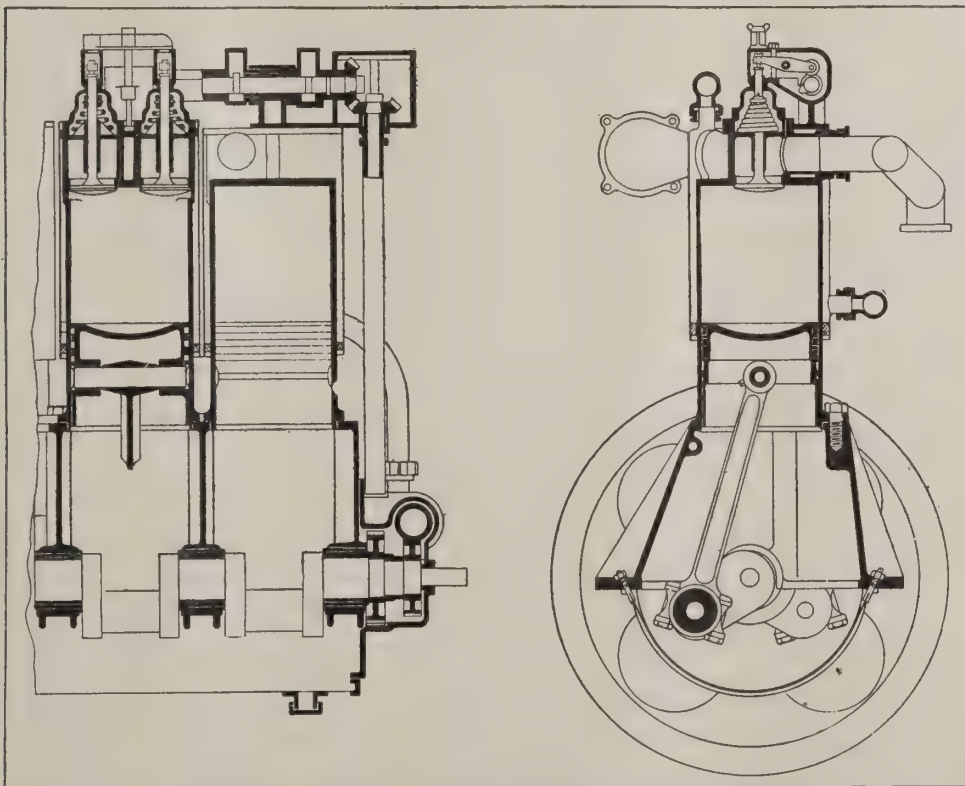


Fig. 29.—120 H.P. Six-Cylinder Green Engine, which has won several prizes in England. The lower end of the water-jacket is held in place by a rubber ring



# Substantial Response to Appeal for Support to Develo

THE movement to develop aviation corps for the National Guard and Naval Militia of the States is developing substantially. Since the Curtiss Aeroplane Company presented a flying boat and a course of training for pilot and mechanic for the Naval Militia of the state of New York and Messrs. Stuart McDonald and A. M. Andrews, of Chicago, offered a Curtiss flying boat to the Illinois Naval Reserve, the use of eight other aeroplanes, and services of aviators have been offered to different states. The total contributions received by the Aero Club of America and through New York newspapers aggregate as follows:

A Flying Boat and a course of training for both a pilot and a mechanic, for the Naval Militia of New York State, offered by the Curtiss Aeroplane Company.

Use of Curtiss Flying Boat and services of pilot to the Naval Militia of Pennsylvania, by Mr. David H. McCulloch of Newport, Pa.

Use of Thomas Tractor Biplane, military type and services of pilot for the National Guard of Oklahoma, offered by Fred. R. Roberts, of Okmulgee, Oklahoma.

Use of Curtiss Military Type Aeroplane and services of pilot, for the National Guard of New York, by William S. Luckey, of New York.

Use of Biplane and services of pilot for the National Guard of New York, by Mr. Charles F. Niles, of New York.

Use of Schmitt Biplane, military type and services of pilot to National Guard of New Jersey, by Maximilian Schmitt, of Paterson, N. J.

Use of Sloane Tractor Biplane and services of pilot for the National Guard of Oklahoma, by Mr. Overton Bounds, of Kingston, Oklahoma.

Use of two Curtiss Biplanes and services of pilots for the National Guard of Pennsylvania, by Messrs. Halde-man Fegyelmessy and Harvey W. Kays.

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## Constitutional Amendment to Provide Aerial Forces For New York

The proposed Constitutional Amendment to provide for aerial forces in the Militia of the State of New York was considered at the meeting of the Board of Governors of the Aero Club of America and approved.

The Amendment was introduced at a recent session of the Constitutional Convention by Hon. William P. Bannister. It amends Section III of Article XI of the Constitution by the addition of the two words "and aerial," so that said Section III will read as follows:

"The Militia shall be organized and divided into such land, naval and aerial, and active and reserve forces, as the Legislature may deem proper, provided, however, that there shall be maintained at all times, a force of not less than ten thousand enlisted men, fully uniformed, armed, equipped, disciplined and ready for active service. And it shall be the duty of the Legislature at each Session to make sufficient appropriations for the maintenance thereof."

The amendment has now been referred to the Club's Committee on Military and Naval Affairs, which is composed of the following authorities:

Cornelius Vanderbilt, *Chairman*  
Major F. L. V. Hoppin, N. Y. N. G.  
Lieut.-Col. Samuel Reber, U. S. A.  
Capt. Mark L. Bristol, U. S. N.  
Major Charles Elliott Warren, N. Y. N. G.  
Brig.-Gen. Robert K. Evans, U. S. A.  
Capt. A. S. Cowan, U. S. A.  
Lieut.-Comm. H. S. Mustin, U. S. N.  
Lieut.-Col. C. DeW. Wilcox, U. S. A.

In heartily approving this amendment the Governors of the Aero Club of America expressed regret that the Militia cannot, for lack of aeroplanes manoeuvre under conditions closely approximating those of modern warfare, in which aeroplanes are used for scouting, range finding, locating big guns and indicating their positions to the artillery, bomb dropping, protecting transports from submarines, carrying messages and fighting off hostile aircrafts. It was resolved that other states, particularly those on the Atlantic and Pacific Coasts, which are open to attack by hostile battleships, aircraft and submarines, be urged to make similar provisions at the earliest possible moment.

## The Peace and Preparation Conference

The second session of the National Security League's Conference on Peace and Preparedness, on June 15th, was highly successful. The Navy session, held at 10 A. M., at the Hotel Astor, was addressed by Hon. Ex-Secretary of War, Charles J. Bonaparte, James M. Curley, Mayor of Boston, Lieut. Commander Roland R. Riggs, U. S. N., William C. Church, and Henry A. Wise Wood, vice-president of the Aero Club of America and editor of *Flying*.

Lack of space prevents us from giving lengthy quotations of even Mr. Wise Wood's address on the aeronautical needs of the United States—which, we are advised, will be published in full, in *Flying* for July.

This session was successful, as was the session at the lunch which closed the Conference, at which 1,000 people participated. The following gentlemen spoke:

Ex-Secretary of the Navy, George Von L. Meyer; Luke E. Wright, ex-Secretary of War and former Governor General of the Philippines; Major George Haven Putnam, Frederic R. Coudert and S. Stanwood Menken, president of the league, who presided. Seated at the speakers' table were many men of national prominence, among them William F. McCombs, Democratic National Chairman; Representative A. P. Gardner, of Massachusetts; Major James M. Curley, of Boston; ex-Attorney General Charles J. Bonaparte, Alton B. Parker, Jacob M. Dickinson, ex-Secretary of War; Bainbridge Colby, Col. Charles E. Lydecker, William C. Church, Comdr. R. R. Riggs, U. S. N., retired, Col. Franklin Q. Brown and J. G. White.

Another meeting of the Conference Committee on National Preparedness will be held at the Aero Club of America on the evening of June 24th, as this number of *Aerial Age* goes to press.

Among the National Security League's most interesting exhibits at the Astor were William S. Luckey's Curtiss biplane and a Sperry gyroscope mounted on a frame which made it possible to demonstrate its *modus operandi*. These two aeronautic exhibits and the Whitehead torpedo kindly loaned by permission of Secretary Daniels were very much appreciated by the thousands of visitors who inspected the exhibits.



# Curtiss Granted New Flying Boat Patent

Full Text of the Claims \*

## Claims—

1. In a hydro-aero machine, the combination of one or more air plane supporting surfaces extending transversely of the machine in lifting relation thereto, rigid floating means for supporting the machine on the water including a forward buoyant portion having a hydroplane surface commencing at a point well in advance of the center of gravity of the machine and extending downwardly and rearwardly terminating in a rearwardly facing step in the vicinity of a vertical line through the center of gravity of the machine, and a rear buoyant portion extending well to the rear of the center of gravity of the machine and constituting a tail portion decidedly lighter per unit of length and of a decidedly less displacement per unit of length when the machine is at rest on the water, than the forward buoyant portion, said rear portion having a bottom surface commencing at the rear of the step and higher than the bottom of said forward hydroplaning surface, whereby the machine may rock about the step and plane on the water at speed with its tail portion decidedly raised above its normal displacement to readily break from the water, the machine when at rest being supported on both bottom surfaces of said forward and rear buoyant portions to give longitudinal stability, and means for driving the machine at such speed as to cause it to rise from the water.

2. In a hydro-aero-machine, the combination of a main air plane supporting surface extending transversely of the machine in lifting relation thereto, floating means for supporting the machine on the water including a forward buoyant portion having a bottom surface commencing at a point well in advance of the center of gravity of the machine and inclining downwardly and rearwardly and thence rearwardly and more horizontally and in the form of an effective hydroplane surface terminating in a rearwardly facing step intermediate the forward and rear edges of said main air plane surface, and a rear buoyant portion extending well aft of the rear edge of said main air plane surface to increase longitudinal stability on the water, and having a bottom surface higher than the bottom of the buoyant portion in advance thereof and free of head resistant surfaces extending down to said hydroplane surface as would prevent the rocking of the machine about said step to facilitate breaking from the water, and means for driving the machine at such speed as to cause it to rise from the water.

3. In a hydro-aero-machine, the combination of one or more air plane supporting surfaces extending transversely of the machine in lifting relation thereto, floating means for supporting the machine on the water including a forward buoyant portion having a hydroplane surface commencing at a point well in advance of the center of gravity of the machine and extending downwardly and rearwardly terminating in a rearwardly facing step in the vicinity of a vertical line through the center of gravity of the machine, and a rear buoyant portion extending well to the rear of the center of gravity of the machine and constituting a tail portion decidedly lighter per unit of length and when the machine is at rest on the water, of decidedly less displacement per unit of length than the forward buoyant portion, said rear portion having a bottom surface commencing at the rear of the step and higher than the bottom of said forward hydroplaning surface, and free of surfaces that would prevent the machine rocking substantially about the step, the machine when at rest being supported on both bottom surfaces of said forward and rear buoyant portions to give longitudinal stability, the bow of the buoyant forward portion being free from aerial balancing and aerial propelling means, longitudinal aerial stabilizing means located at the rear of the machine, means for driving the machine including aerial propelling means carried to the rear of the main supporting air plane, and aviator's control mechanism for the stabilizing and propelling means located forward of the aerial propeller, whereby said stabilizing and propelling means are protected and the forward view of the aviator unobstructed by the same.

4. In a hydro-aero-machine, the combination of an air plane supporting surface extending transversely of the machine in lifting relation thereto, a relatively long rigid centrally floating body boat for supporting the machine on the water including forward and rear buoyant portions normally floating on the machine on the water to increase longitudinal stability, the bottom of the forward portion being fairly broad and inclining downwardly and rearwardly at a relatively sharp angle to provide a gliding bottom at the bow giving substantial resistance to the boat's diving, and thence extending rearwardly more horizontally in the form of an effective hydroplane surface, said boat bottom having a rearwardly facing step approximately beneath the center of gravity of the machine, and the rear buoyant portion having its bottom surface commencing at the rear of said step and higher than the edge of the step and inclining upwardly and rearwardly so that the machine is adapted to more readily rise from the water, aerial stabilizing and steering means and means including an aerial propeller for driving a machine at such speed as to cause it to rise from the water.

5. In a hydro-aero-machine, the combination of an air plane supporting surface extending transversely of the machine in lifting relation thereto, a relatively long rigid centrally floating body boat for supporting the machine on the water including forward and rear buoyant portions normally floating on the machine on the water to increase longitudinal stability, said forward portion having a fairly broad bottom extending downwardly and rearwardly beneath the bow to provide a gliding surface providing substantial resistance to the boat's diving and thence extending rearwardly more horizontally said bottom being in the form of an effective hydroplane with a rearwardly facing step in the vicinity of a vertical line passing through the center of gravity of the machine, the rear buoyant portion of the boat having its bottom surface commencing at the step and higher than the edge of the step and having no substantial length of surface as low as the forward hydroplane surface whereby the machine may readily rise from the water, aerial balancing and steering means and means including an aerial propeller for driving the machine at such speed as to cause it to rise from the water.

6. In a hydro-aero-machine, the combination of a main air plane supporting surface extending transversely of the machine and in lifting relation thereto with the center of gravity of the machine located intermediate the forward and rear edges of said main plane, floating means for supporting the machine on the water including a forward buoyant portion having a broad hydroplane surface beneath it commencing at a point in advance of the forward edge of said main plane and extending downwardly and rearwardly terminating in a rearwardly facing step intermediate the forward and rear edges of said main plane, the machine being substantially free from head-resistant surfaces extending as low as said hydroplane surface, and a rear buoyant portion extending well aft of the rear edge of the planes, and aft of the planes decidedly lighter and of decidedly less displacement each per unit of length than the forward buoyant portion and having a bottom surface commencing in the rear of said step and higher than the hydroplane surface in advance thereof to enable the machine to readily break from the water, the machine when at rest being floated on both buoyant portions to increase longitudinal stability on the water, the bow of the forward buoyant portion being free from aerial balancing and aerial propelling means, an engine mounted above the floating means and intermediate the forward and rear edge of the main air plane surface, an air propeller directly connected on the main shaft of said engine and located substantially at the rear of said main plane, a cockpit in the buoyant member forward of said main plane, longitudinal aerial stabilizing means located at the rear of the machine, a

vertical aerial rudder also at the rear of said machine, and aviator's control mechanism in the cock-pit for governing the stabilizing and propelling means, whereby the said stabilizing and propelling means are protected and the forward view of the aviator unobstructed by the same.

7. In a hydro-aero-machine, the combination of rigid buoyant floating means for supporting said machine on the water, including a buoyant forward and a buoyant rear or tail portion each sitting in the water with the machine at rest to increase the longitudinal stability of the machine, one or more main air plane supporting surfaces secured to the floating means and extending out on either side thereof in lifting relation thereto, the forward buoyant portion having a hydroplane bottom surface which terminates in the vicinity of a vertical line passing through the center of gravity of the machine and inclines forward and upward to a point well ahead of said vertical line and of such length as to permit the machine to plane upon said surface on the water in gaining speed to raise the tail portion from its normal displacement to facilitate breaking from the water, the buoyant rear portion extending from a point in the vicinity of said center of gravity vertical line to a point well to the rear of said line to give longitudinal stability to the machine when resting on the water and having a bottom inclined upwardly and rearwardly as a reverse hydroplaning surface to facilitate the machine breaking from the water, a rearwardly facing step intermediate said forward hydroplaning surface and the rearwardly and upwardly inclined bottom surface and terminating the lowermost bottom hydroplane supporting surface of the machine, lateral and longitudinal aerial balancing means, and means for driving the boat at such speed as to cause it to be lifted from the water.

8. In a hydro-aero-machine, the combination of floating means for supporting said machine on the water, including a buoyant forward and a buoyant rear or tail portion each sitting in the water with the machine at rest, a main air plane surface secured to said floating means and extending out from each side thereof in lifting relation thereto, the forward buoyant portion of said floating means having a hydroplane bottom surface the rear of which terminates at a point intermediate the forward and rear extremities of said main air plane and extends forward and upward to a point well in advance of the center of gravity of the machine to permit the machine to plane on the water on said surface in gaining speed, the rear buoyant portion of said water-supported means extending rearwardly well aft of the rear extremity of said main air plane surface to increase the longitudinal stability of the machine when resting on the water, said tail portion at the rear of the main plane being decidedly lighter than the forward buoyant portion and having a bottom commencing at a point in advance of the rear edge of the main air plane surface and inclined upwardly and rearwardly, a rearwardly facing step intermediate said forward hydroplaning surface and said bottom surface of the tail, said step terminating the lowermost hydroplane surface of the machine, lateral and longitudinal aerial balancing means, and means for driving the machine at such speed as to cause it to be lifted from the water.

9. In a hydro-aero-machine, the combination of a main air plane supporting surface extending transversely of the machine in lifting relation thereto with the center of gravity of the machine lying intermediate the forward and rear edges of said main plane, a long relatively narrow rigid central body boat floating substantially the entire machine when on the water and comprising a forward buoyant portion extending well forward of the main air plane surface and a buoyant rear or tail portion extending well aft of said main plane, the machine being normally supported on the water by both said buoyant portions to increase the longitudinal stability of the same, the forward portion being deep and broad as compared with the tail portion to render the boat seaworthy, give lateral stability and accommodate an effective hydroplane surface, the water-submerged side portions of the tail tapering rearwardly to form a tail portion at the rear of the main air plane decidedly lighter and of decidedly less displacement per unit of length than the broad deep portion, the bottom of the boat having an effective hydroplane surface extending from the bow rearwardly to and terminating in a rearwardly facing distinct step to the rear of the forward edge of the main air plane, the bottom of the boat to the rear of said step inclining upwardly and rearwardly and constituting a reverse hydroplane surface whereby a light water-supported tail portion is provided which will readily break from the water when the boat is planing at speed, and means including an aerial propeller for driving said boat with sufficient speed to make it rise from the water.

10. In a hydro-aero-machine, the combination of a main air plane supporting surface extending transversely of the machine in lifting relation thereto with the center of gravity of the machine lying intermediate the forward and rear edges of said main plane, a long relatively narrow rigid central body boat floating substantially the entire machine when on the water and comprising a forward buoyant portion extending well forward of the main air plane surface and a buoyant rear or tail portion extending well aft of said main plane, the machine being normally supported on the water by both said buoyant portions to increase the longitudinal stability of the same, the forward portion being deep and broad as compared with the tail portion to render the boat seaworthy, give lateral stability and accommodate an effective hydroplane surface, the water-submerged side portions of the tail tapering rearwardly to form a tail portion at the rear of the main air plane decidedly lighter and of decidedly less displacement per unit of length than the broad deep portion, the bottom of the boat having an effective hydroplane surface extending from the bow rearwardly to and terminating in a rearwardly facing distinct step to the rear of the forward edge of the main air plane, the bottom of the boat to the rear of said step inclining upwardly and rearwardly and constituting a reverse hydroplane surface whereby a light water-supported tail portion is provided which will readily break from the water when the boat is planing at speed, means for driving the boat including an aerial propeller located substantially at the rear of the main plane, a vertical aerial rudder and longitudinal aerial balancing planes each located at the rear of the machine, a seat for the aviator in advance of the aerial propeller, and aviator's control mechanism at said seat for governing said control and driving means, the forward end of the boat being free from aerial propelling and controlling mechanism to give the aviator an unobstructed forward view.

11. In a hydro-aero-machine, the combination of a relatively narrow main air plane supporting surface extending out transversely of the machine in lifting relation thereto substantially above the center of gravity of the machine, a rigid central body boat floating substantially the entire machine on the water and comprising a forward buoyant portion extending well forward of the main air plane surface and a buoyant rear or tail portion extending well aft of said main plane, the machine being normally supported on the water by both said buoyant portions to increase the longitudinal stability of the machine, the forward portion being deep as compared with the tail portion, the bottom of the boat having an effective hydroplane surface extending from a point well in advance of the main air plane rearwardly and substantially the full width of the submerged part of the body boat coextensive therewith and terminating in a rearwardly facing distinct step intermediate the forward and rear edges of the main air plane, the bottom of the boat at the rear of said step being higher than the forward hydroplane surface and free of water-resistant surfaces as low as the said forward surface whereby the tail will be readily raised in the water when the boat is planing at speed, and means including an aerial propeller for driving said boat at sufficient speed to make it rise from the water.

\* Continued from page 326.



12. In a hydro-aero-machine, the combination of a relatively narrow main air plane supporting surface extending out transversely of the machine in lifting relation thereto substantially above the center of gravity of the machine, a rigid central body boat floating substantially the entire machine on the water and comprising a forward buoyant portion extending well forward of the main air plane surface and a buoyant rear or tail portion extending well aft of said main plane, the machine being normally supported on the water by both said buoyant portions to increase the longitudinal stability of the machine, the forward portion being deep and broad as compared with the tail portion to render the boat seaworthy and give lateral stability and accommodate an effective hydroplaning surface and having an overhanging bow, the bottom of the boat inclining at a relatively sharp angle downwardly and rearwardly along the overhanging bow and thence rearwardly more horizontally in the form of an effective hydroplaning surface and terminating in a rearwardly facing distinct step to the rear of the forward edge of the main air plane, the bottom of the boat at the rear of said step inclining upwardly and rearwardly in the form of a reverse hydroplaning surface beneath the tail and the sides of said tail portion tapering rearwardly, whereby a decidedly light tail portion is provided which will readily break from the water when the boat is planing at speed, means including an aerial propeller for driving the boat at sufficient speed to cause it to rise from the water, longitudinal aerial balancing means, and aviator control mechanism for governing said aerial controlling and propelling means.

13. In a hydro-aero-machine, the combination of a relatively narrow air plane supporting surface extending out transversely of the machine in lifting relation thereto, the center of gravity of the machine being intermediate the forward and rear edges of said plane, a rigid central body boat floating substantially the entire machine on the water and comprising forward and rear buoyant portions respectively extending well forward and aft of said air plane surface, the machine being supported on the water by both said buoyant portions to increase the longitudinal stability of the machine, the forward portion being deep as compared with the tail portion and having a scow bow and a bottom in the form of an effective hydroplaning surface extending from the bow downwardly and rearwardly to a point in advance of the main air plane and thence extending rearwardly more horizontally and terminating in a rearwardly facing step located at a point intermediate the forward and rear edges of the air plane, the bottom of the boat beneath the tail portion being located higher than the step and inclined upwardly and rearwardly in the form of a reverse hydroplaning surface, whereby the buoyant tail portion of the boat is of less displacement per unit of length than the forward buoyant portion and adapted to more readily rock vertically when the boat is planing at speed on the water to facilitate breaking from the water, aerial stabilizing means, and means including an aerial propeller for driving the machine at such speed that it may be supported in the air.

14. In a hydro-aero-machine, the combination of a relatively narrow main air supporting surface extending transversely of the machine in lifting relation thereto with the center of gravity of the machine located intermediate the forward and rear edge of said main plane, a rigid central floating body boat for supporting the machine on the water, including forward and rear buoyant portions extending respectively well forward and aft of the main plane and each normally floating the machine on the water to increase the longitudinal stability, the forward portion being deep and having a hydroplaning bottom commencing at a point in advance of the forward edge of said main plane and extending downwardly and rearwardly terminating in a rearwardly facing step in proximity to a vertical line through the center of gravity of the machine and intermediate the forward and rear edges of the main plane, the rear buoyant portion aft of the main plane being of decidedly less displacement per unit of length than the forward buoyant portion and having a bottom surface commencing to the rear of said step and inclining upwardly and rearwardly, whereby the machine when planing at speed on the water is adapted to rock forward on the forward hydroplaning surface with its tail elevated to readily break from the water, and means for driving the machine at such speed as to cause it to rise from the water.

15. In a hydro-aero-machine, the combination of a main air plane supporting surface extending transversely of the machine in lifting relation thereto, a rigid central floating body boat for supporting the machine on the water, including forward and rear buoyant portions extending respectively well forward and aft of the main plane and each normally floating the machine on the water to increase the longitudinal stability, the forward portion being deep and having an overhanging bow and a hydroplane bottom surface extending from the bow downwardly and rearwardly and terminating in a rearwardly facing step intermediate the forward and rear edges of the main air plane, the rear buoyant portion aft of the main air plane being of decidedly less displacement per unit of length than the forward buoyant portion and having its water-submerged side portions tapering rearwardly and having a bottom surface commencing to the rear of the step and inclined upwardly and rearwardly with a reverse hydroplaning surface free from head resistant surfaces projecting below the forward hydroplaning surface, whereby the vertical rocking movements of the tail about the step are facilitated to enable the machine to more readily break from the water.

16. In a hydro-aero-machine, the combination of an air plane supporting surface extending transversely of the machine in lifting relation thereto with the center of gravity of the machine lying intermediate the forward and rear edges of said main plane, a long relatively narrow rigid central body boat floating substantially the entire machine when on the water and comprising a forward buoyant portion extending well forward of the main air plane surface and a buoyant rear or tail portion extending well aft of said main plane, the machine being normally supported on the water by both said buoyant portions to increase the longitudinal stability of the same, the forward portion being deep and broad as compared with the tail portion to render the boat seaworthy, give lateral stability and accommodate an effective water planing surface, the tail portion at the rear of the main plane being of decidedly less displacement per unit of length than said forward portion, the bottom of the boat having an effective hydroplaning surface extending from the bow rearwardly and terminating in a rearwardly facing distinct step in proximity to a vertical line through the center of gravity of the machine and intermediate the forward and rear edges of the main air plane, the bottom of the boat to the rear of said step inclining upwardly and rearwardly and constituting a reverse hydroplane surface, whereby the machine when planing at speed on the water is adapted to rock forward and plane on its forward hydroplaning surface with the tail elevated to facilitate breaking from the water, means including an aerial propeller mounted to the rear of the main plane for driving the boat at sufficient speed to make it rise from the water, a vertical aerial rudder and longitudinal aerial balancing means carried at the rear of the machine, a seat for the aviator forward of the propeller, and means thereat for controlling said aerial balancing and propelling means.

17. In a hydro-aero-machine, the combination of floating means for supporting the machine on the water, a main air plane supporting surface extending transversely of the floating means in lifting relation thereto, said floating means having an effective hydroplane surface extending downwardly and rearwardly and terminating in a transverse vertical plane approximately beneath the center of gravity of the machine and also having a reverse hydroplane surface extending upwardly and rearwardly from said plane at a salient angle to the forward hydroplane surface, whereby a transverse edge is formed about which the machine when speeded up on the water may be rocked vertically onto the forward hydroplane surface to facilitate the machine's rising from the water, said machine being normally floated with both the forward hydroplane surface and the reverse hydroplane surface engaging the water to increase longitudinal stability, steering means for said machine, and means including an aerial pro-

peller for driving the machine at such speed as to cause it to rise from the water.

18. In a hydro-aero-machine, the combination of a central body boat capable of supporting the entire machine on the water, a main air plane supporting surface extending transversely of said boat in lifting relation thereto, said boat having an overhanging bow and an effective hydroplaning surface extending from the bow downwardly and rearwardly at a relatively sharp angle and thence rearwardly more horizontally and terminating in a vertical transverse plane approximately beneath the center of gravity of the machine, said hydroplaning surface being substantially the full width of the water-submerged portion of the boat coextensive therewith, said boat also having a reverse hydroplane surface extending upwardly and rearwardly from said plane at a salient angle to the forward hydroplane surface, whereby a transverse edge is formed about which the machine when speeded up on the water may be rocked vertically onto the forward hydroplaning surface to facilitate its rising from the water, aerial balancing and steering means for said machine, and means including an aerial propeller for driving the machine at such speed as to cause it to rise from the water.

19. In a hydro-aero-machine, the combination of an air plane supporting surface extending transversely of the machine in lifting relation thereto, floating means for supporting said machine on the water comprising a forward buoyant portion having a hydroplane surface beneath it running rearwardly and terminating in an edge approximately beneath the center of gravity of the machine and a buoyant portion to the rear of said edge, there being a distinct clearance between the rear of said hydroplane surface and the forward part of the bottom of said rear buoyant portion, said machine being substantially free from head resistant surfaces as low as said hydroplane surface, such as would interfere with the rocking of the machine about said step, said two buoyant portions being so arranged that when the machine is at rest on the water it floats on both said buoyant portions, and an aerial propeller for driving the machine at such speed that it will be supported in the air.

20. In a hydro-aero-machine, the combination of an air plane supporting surface extending transversely of the machine, a body boat having a forward hydroplane surface beneath it terminating in a distinct rearwardly facing step in the boat body intermediate the immersed portion when at rest and in proximity to a vertical line through the center of gravity of the machine, and also having a tail portion with a bottom inclined upwardly and rearwardly from the step so that at high speed the boat is adapted to rock forward and travel on the water upon said hydroplane surface with the tail of the boat elevated, longitudinal aerial balancing means, and means including an aerial propeller for driving the machine at such speed that it will be supported in the air.

21. In a hydro-aero-machine, the combination of main air plane supporting surface extending transversely of the machine in lifting relation thereto, a rigid central floating body boat for supporting the machine on the water, including forward and rear buoyant portions extending respectively well forward and aft of the main plane and each normally floating the machine on the water, the bottom of the forward portion having an effective hydroplaning surface extending from the bow downwardly and rearwardly and terminating in a rearwardly facing step intermediate the forward and rear edges of the air plane and approximately beneath the center of gravity of the machine, the bottom of the rear portion of the boat aft of the step being higher than the hydroplaning surface and presenting no substantial hydroplane surface as low as the hydroplane surface terminating at the step, said bottom of the rear portion shaped so that the action of the water thereon permits the machine at high speed to rock forward onto the forward hydroplaning surface and travel thereon with its tail elevated and its air plane surface at an angle of incidence less than when said machine is at rest, and means including an aerial propeller for driving said machine at such speed as to cause it to be supported in the air.

22. In a hydro-aero-machine, the combination of a main air plane supporting surface extending well out transversely of the machine in lifting relation thereto, a relatively long narrow body boat comprising forward and rear buoyant portions both engaging the water to increase the longitudinal stability of the machine, said boat having a bottom surface extending from the bow downwardly and rearwardly and thence extending rearwardly and more horizontally and terminating in a distinct rearwardly facing step located at a point intermediate the immersed portion of the boat when at rest and approximately beneath the center of gravity of the machine, said boat having a scow bow and said bottom forward of the step being in the form of an effective hydroplaning surface of substantially the full width of the submerged portion of the boat extending coextensive therewith, the bottom of the rear portion of said boat commencing at the step and extending rearwardly therefrom and being higher than the hydroplaning surface so as to present no substantial length of surface as low as said hydroplaning surface in advance of the step whereby the tail portion is adapted to more readily rock vertically and the machine adapted at high speed to rock forward onto said hydroplaning surface and travel thereon with its tail elevated and its air plane surface at an angle of incidence less than when said machine is at rest, said forward hydroplane surface being of such length as to maintain the machine in such planing position, and means including an aerial propeller for driving the machine at such speed that it will be supported in the air.

23. In a hydro-aero-machine, the combination of a main air plane supporting surface extending transversely of the machine in lifting relation thereto, a rigid central floating body boat for supporting the machine on the water, including forward and rear buoyant portions extending respectively well forward and aft of the main plane and each normally floating the machine on the water, the sides of the tail portion tapering rearwardly of the air plane surface, the bottom of the forward portion being decidedly broader than the bottom of the tail portion at the rear of the air planes so as to accommodate an effective hydroplaning surface, and having an effective hydroplaning surface extending from the bow downwardly and rearwardly and terminating in a rearwardly facing step intermediate the forward and rear edges of the air plane and approximately beneath the center of gravity of the machine, the bottom of the rear portion of the boat aft of the step inclining upwardly and rearwardly, being higher than the hydroplaning surface so as to present no substantial length of bottom surface as low as the hydroplaning surface in advance of the step, whereby the machine is adapted to rock vertically on the step and at high speed and to rock forward onto the hydroplaning surface and travel thereon with its tail elevated and its air plane surface at an angle of incidence less than when said machine is at rest, means including an aerial propeller mounted in the rear of the main air plane for driving the machine at such speed as to cause it to be supported in the air, longitudinal and lateral aerial balancing means, a cock-pit in the boat forward of said propeller and control means thereat for governing said aerial controlling and propelling means, the forward end of the boat being substantially free from propelling and controlling means to give the aviator an unobstructed forward view.

24. In a hydro-aero-machine, the combination of a main air plane supporting surface extending out transversely of the machine in lifting relation thereto, the center of gravity of the machine being intermediate the forward and rear edges of said plane, a rigid central body boat floating substantially the entire machine on the water and comprising forward and rear buoyant portions respectively extending well forward and aft of the main air plane, the rear of the boat being in the form of a relatively light tail, the machine normally resting on both the forward and rear buoyant portions to increase longitudinal stability, the forward portion of said boat being deep and broad as compared with the tail portion to render the boat more seaworthy, give it lateral stability and accommodate an effective hydroplane surface, the sides of the boat gradually

(Continued on page 355)





# Foreign News

Edited by L. d'Orcy



## Austria

An Austrian airship has arrived by rail at Laibach for co-operating with military operations on the Italian frontier.

A military airship, while returning to Trent after reconnoitring along the Valtellina frontier, was caught in a storm and dashed against the rocks on the mountains of the Adamello group, according to news received at Buchs, Switzerland, from Innsbruck. The aircraft is reported to have been badly damaged.

(The airship referred to is probably the German Parseval dirigible that was reported to have arrived at Trento on May 26).

## France

Flight Sub-Lieutenant Reginald A. J. Warneford, who gained fame recently by blowing to pieces a Zeppelin over Belgium, and Henry B. Needham, the American writer, his passenger, were killed on June 17 by the fall of Warneford's aeroplane at Buc, France.

According to a report received from Paris, the accident resulted from an explosion in midair, which caused Lieutenant Warneford to lose control of the machine, which crashed to earth from a height of 500 feet.

Persons who were present in the aerodrome expressed the opinion that Warneford was trying to loop-the-loop and that the aircraft, a heavy military Farman biplane, got out of his control and he was unable to right it again when upside down.

The lieutenant had been spending a few days in Paris, where he came after his Zeppelin exploit to receive his decoration of the Legion of Honor. He had already received the Victoria Cross for his feat.

The French aerial fleet has scored another great success when on June 15 four squadrons of bombardier aeroplanes sailed for Carlsruhe, capital of the Grand-Duchy of Baden. One of the twenty-four machines had to turn back soon after the start owing to motor defect, but the remainder arrived in spite of a northwestern gale over the town between 5.50 and 6.20 o'clock in the morning.

Over one hundred bombs were dropped on the town, particularly on the railway station, the arms factories, and the ducal palace; though subjected to a terrific fire from anti-aircraft guns all but two of the aeroplanes returned in safety. One was destroyed by the guns, its crew being killed in the fall, while the other had to alight on account of motor trouble and was burned by its crew before they were made prisoners.

A dispatch from Carlsruhe says that eighty-nine persons were killed and hundreds seriously injured by the air bombs, while much material damage was done.

The attack was made, according to an official statement, "in retaliation for the bombardment by the Germans of French and English open towns."

(Carlsruhe is 100 miles distant from Nancy, the nearest French aeroplane base. Ludwigshafen, just opposite Mannheim, which was attacked by eighteen French aeroplanes on May 26 is 125 miles from Nancy, while the Zeppelin factory of Friedrichshafen, on Lake Constance, which was raided on several occasions by British and French airmen, is 120 miles away from Belfort).

## Germany

News of remarkable activity in the Zeppelin works at Friedrichshafen comes from Geneva. It is said double shifts are now working in the factories, which are turning out a completed Zeppelin airship every twenty days. One of the two Zeppelins destined for operations against Italy was sent away from Friedrichshafen on June 16 to replace the dirigible destroyed over Belgium recently by Sub-Lieutenant Warneford, who was killed near Paris.

It is reported in Geneva that the German authorities are preparing for an important combined raid of Zeppelins and aeroplanes on Paris and London in retaliation for the recent attack on German towns by aviators of the Allies.

(This report seems to contradict an earlier information from the same source to the effect that since April 1 the Friedrichshafen factory was completing one airship every fortnight).

According to an officer of the London police force, the bombs dropped by the German airships on London gave off enormous heat, stated to be of 5,000 degrees. The bombs, he declared, were certainly barbarous weapons. He added that one highly explosive bomb which had not exploded had been found.

The jury returned the verdict: "Death by suffocation and burns, the two deceased persons having been murdered by some agent of a hostile force."

The German airship raid upon London has caused great rejoicing at Friedrichshafen, the headquarters of the Zeppelin balloon works, on Lake Constance, the town being gayly decorated with flags in honor of the first aerial attack on London proper. Many congratulatory telegrams were received by Count Zeppelin.

## Great Britain

An interesting statement was made in the House of Commons on June 16, when H. J. Tennant, Under Secretary for War declared that Great Britain had actually in process of manufacture the large type of aeroplane which was in use by the Russian Government.

He also told the House that since the war began the number of airmen had been increased tenfold, and that, instead of one flying school, training twenty-one or twenty-two students, Great Britain now had eleven such schools, able to train and instruct over 200 students.

The Daily Chronicle interprets this statement as referring to the Sikorsky biplane, the largest heavier-than-air machine yet invented, its dead weight being over three and one-half tons. This machine can carry a load of over a ton, at least a quarter of which would consist of explosives.

According to another dispatch from London the Under Secretary's statement referred to a new Curtiss tractor biplane of one hundred feet span, which is fitted with two 160 h.p. Curtiss engines and is supposed to lift 700 lbs. more than the *America*.

According to a dispatch to the *Associated Press* the British authorities have a very effective system of anticipating the visits of Zeppelins. On the night before the raid over Newcastle the lights were extinguished for the first time in several of the towns near which the aerial visitor dropped its bombs on the following night. On the afternoon of April 15th the special constables in London were notified at 4 o'clock in the afternoon to be on duty that evening, and later a Zeppelin approached nearer London than any of the German aircraft had previously come.

It is probable that either from Holland or the sea patrol, or both, the British authorities get their warnings that the airships may be expected. Earlier in the war there was some anxiety about the probable results of these visits, whereas now there is no excitement and no fear is expressed in any quarter.

## Italy

A suspicious aeroplane, believed to be of Austrian nationality, is reported to have flown over Rome some time ago. All the lights of the city were put out immediately the presence of the aerial visitor became known, and on every hand questions were asked, but not satisfactorily answered, concerning the mysterious aircraft.

A partial solution of the mystery was given on June 16 by the *Messaggero*, which published the following:

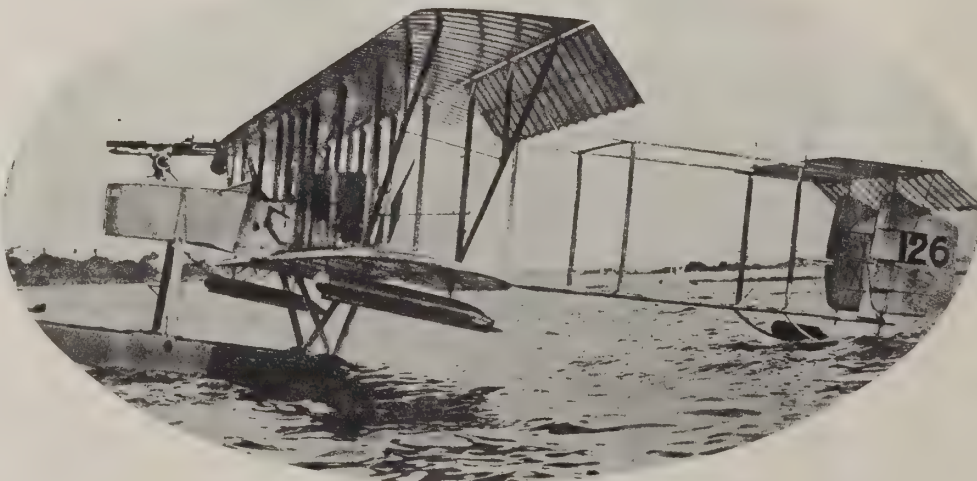
"Our enemies have succeeded in bringing an aeroplane to a point near Rome, where it is being kept in hiding. It has already flown over the city."

An official note issued in Rome says:

"On the night of June 17th, while a naval seaplane was engaged in destroying the railroad station at Divaca (junction of the Istrian railway) our dirigibles made an incursion over Austrian territory, bombarding with great effect, it appears, positions at Monte Santo and entrenchments facing Gradisca. Extensive damage also was done the Oviadeaga station on the railroad from Gorizia to Dornberg. All the machines returned unscathed."

Italian airships bombarded on June 19 the Trieste ammunition factory.

A pusher seaplane of the British Navy, armed with a one-and-one-half pounder Vickers quick-firing gun.



Courtesy of "Flying"





# MODEL NEWS

Edited by WALTER H. PHIPPS



## CLUBS

THE AERO SCIENCE CLUB OF AMERICA  
29 West 39th Street, New York City

PACIFIC NORTHWEST MODEL  
AERO CLUB  
195 Ravenna Boulevard, Seattle, Wash.

LONG ISLAND MODEL AERO CLUB  
401 Grant Ave., Cypress Hills, L. I.

BAY RIDGE MODEL CLUB  
6730 Ridge Boulevard, Bay Ridge, Brooklyn

SUMMIT MODEL AERO CLUB  
26 Shady Side Avenue, Summit, N. J.

THE ILLINOIS MODEL AERO CLUB  
Room 130, Auditorium Hotel, Chicago, Ill.

TEXAS MODEL AERO CLUB  
517 Navarro St., San Antonio, Texas

MILWAUKEE MODEL AERO CLUB  
402 Bradford Avenue, Milwaukee, Wisc.

CONCORD MODEL CLUB  
c/o Edward P. Warner, Concord, Mass.

AERO CLUB OF ST. LOUIS  
Columbia Bldg., 8th & Locust Sts.,  
St. Louis, Mo.

MODEL AERO CLUB OF OXFORD  
Oxford, Pa.

### Aero Science Club

At the meeting of June 19th it was decided to postpone the Efficiency Contest scheduled for July 4th, until September 30, in order to give all contestants very liberal chance to prepare their efficiency models, and especially to give those members who are experimenting with compressed air and steam driven models sufficient time to bring their tests to definite results. This action is expected to result in the meet being very much larger and more successful as entries are being received steadily for the same.

A series of contests, open to all model clubs, to be nation wide, for the purpose of stimulating interest in the sport has been arranged by the Aero Club of America for the following events: Hand Distance, R O G Duration and Hydro or Flyboat Duration, one meet each month.

Announcement of these meets was greeted with enthusiasm, the list of competitions for the summer and fall now being completed.

For the purpose of developing power driven models, the Aeronautical Society has donated a handsome gold prize to be competed for on Columbus Day, 1915. In this Duration competition none but power models will be admitted, preparations for entry to it are even now being made by seven or eight active motor constructors.

Announcement was made that the club tractor, now being designed, will be started at Oakwood Heights, S. I., as the hangar donated by the Aero Society has been in readiness for a week or more now, and other places which were anticipated will not be available for some time.

The members and officers of the club extend their sympathy to Mr. Louis Fenouillet, one of New York's oldest model enthusiasts, who has suffered serious injury as the result of a motorcycle collision recently. Mr. Fenouillet has been very active in the past as a glider constructor, making many towed flights under difficult varied conditions.

It has been rumored that a number of model enthusiasts in the vicinity of New York have united their efforts in a brave attempt to develop a large racing monoplane model equipped with a stationary eight-cylinder radial compressed air motor working at high speed, the brass tank to hold air at a pressure of 200 pounds per square inch.

Mr. John McMahon has achieved the distinction of being the first American model builder to successfully fly a compressed air driven biplane model. A flight of 17 seconds was recently made under quite difficult conditions. This flight, however, is unofficial.

### Illinois Model Aero Club

The club has entered on a large campaign for increased membership. With the co-operation of the school board authorities of Chicago the I. M. A. C. is holding exhibitions and meets at the important high schools of the city. Crane Technical is first and promises to have sixteen hundred pupils out to witness our program during the regular school hours. The program will consist of model racing, bomb-dropping, spectacular, etc.

Immediately after this exhibition a special speakers' meeting of the club will take place in the evening. Tickets of admission will be issued for this latter event. A very good program has been arranged; especially will the talks by Miss Katherine Stinson and Mr. Partridge be welcomed as they are undoubted authorities on aviation.

The speakers are as follows:

Arthur E. Nealy  
A. C. I. Member  
Mr. Emil Laird  
Mr. E. Partridge  
Mr. Harry Wells  
Miss Katherine Stinson  
Mr. C. R. Borkland

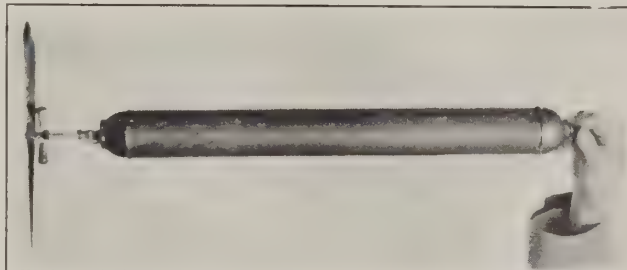
Chairman  
Aviation in War.  
Difficulties of Construction.  
Learning to Fly.  
The Light Type Machine.  
Texas Model Boys.  
The Club and its Aims.

### The McMAHON Compressed Air Motor

Model aeroplane flying is receiving added attention, since the public has seen what the large man-carrying machines have accomplished, in the present war.

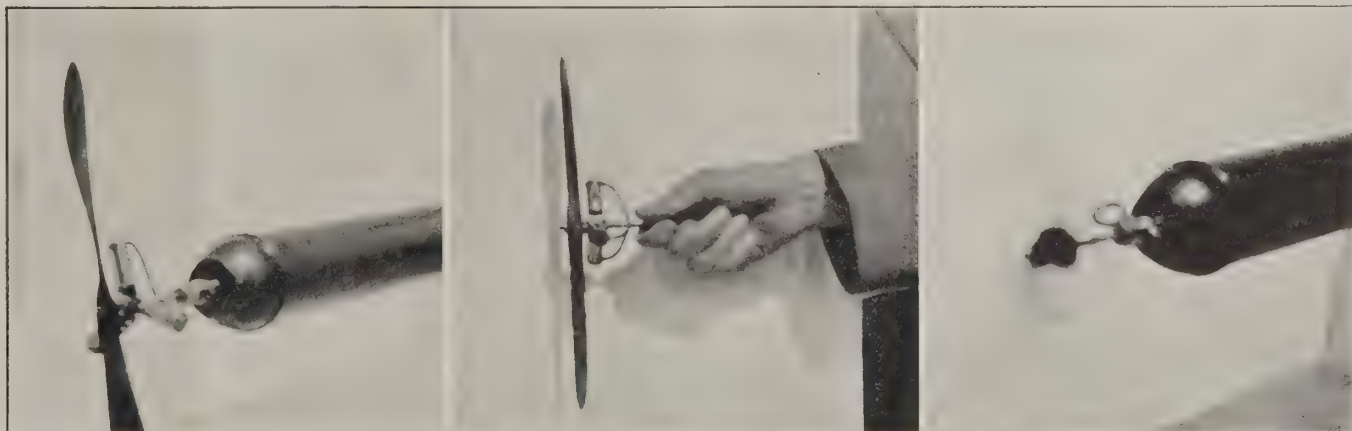
Old model flyers who have not been heard of for the past two years, are coming back, and working like beavers to get ready for the big prize contests, which will be held in the near future.

All over the United States and Europe, model enthusiasts have been trying to get a practical engine that would be light enough to be used with a good deal of success, and the little three-cylinder rotary compressed air motor, designed by J. F. McMahon, who is a member of the Aero Science Club of America, is the lightest yet developed, its actual weight being only 1½ ounces. Mr. McMahon has been experimenting with all types of motors, for the last year. His first was a two-cylinder opposed compressed air engine, with open crank weighing only 1 ounce, but the vibration overcame all possibilities of using it. Next came a three-cylinder stationary, which worked fairly well, but with the same vibration to overcome, and as all model flyers know, friction and vibration would be disastrous to any model. The friction in stationary engines is caused by the pistons continually jumping up and down, like so many pile drivers, and if you should take an engine in your hand, and spin the crank shaft between your fingers, this jumping, will be noticed. But take the crank shaft, hold it steady, then spin the cylinders, and you will find the reason why the rotary is the only one for use in model aeroplane work, and the answer is plain, because all parts, pistons and valves are simply sliding around an axis, and not hammering. The third and last is the one we are about to describe. While working on the same principles as all compressed air motors this one possesses some new ingenious methods of construction which make it more adaptable to model aeroplane practice than the average motors now in use.



If you will refer to the accompanying illustrations, you will notice that the heavy brass crank case used on motors of the past, is done away with, thereby saving at least 1½ ounces of useless weight. Now to the casual observer, it will look as if this would weaken the construction somewhat, but such is not the case. Where crank ends of cylinders are joined together, four thin copper washers are used, being bolted with the smallest machine bolts made, (No. 172) which are riveted, and lastly soldered.

Again weight is saved in the valve construction, instead of heavy taper valves, 3-16-inch brass tubing with drill rod hollowed out, to admit air, is used for intake only. The exhaust occurs when piston is at its lowest point, through ports in the sides of the cylinders. The pistons are made of fibre, which has been found to be best, because as fast as they wear in, they absorb oil, which makes them swell to their right diameter. This insures a perfect air tight fit at all times. The bore is ½-inch and the stroke ¼-inch. The engine complete with tank and propeller weighs but 11½ ounces. Tank is made of No. 30 Bronze. With 13-inch propeller, 18-inch pitch, a 5-ounce thrust is developed. On test, this little motor has run for 45 seconds on 120 lbs. of air at a speed of about 3,000 R. P. M., and has already flown one of Mr. McMahon's models. This motor, which will sell for fifteen dollars complete, with tank and propeller, will be handled by the Model Supply House, which will gladly furnish further particulars.



Three Views of the McMahon Compressed Air Motor, Showing the Motor Still and in Action





Aeronitis is a pleasant, a decidedly infectious ailment, which makes its victims "flighty," mentally and physically. At times it has a pathologic, at times merely a psychologic foundation. It already has affected thousands; it will get the rest of the world in time. Its symptoms vary in each case and each victim has a different story to tell. When you finish this column **you** may be infected, and may have a story all of your own. If so, your contribution will be welcomed by your fellow **aeronuts**. Initials of contributor will be printed when requested.

### An Aerial Joy Ride

Aeroplaner (to passenger)—Did you see me top off that church spire?

Passenger—Sure! Say, this is almost as much fun as automobiling.

### So Say We All

Old Zeppelin and all his works  
I'd find myself forgiving  
If he'd soar up to where it lurks,  
And from the sky  
So high, so high,  
Bring down the cost of living.

Jacob A. Moller, of New Rochelle, announces that he has solved the problem of the submarine menace by inventing an aeroplane which not only will lasso a torpedo but turn it back upon and destroy the submarine which discharged it.

The aeroplanes will be equipped with chains in the form of lassos, which will be operated automatically. As a torpedo is sighted an aeroplane is to swoop down, lasso it and, with a reverse English, send it careening back to its source.

He says he evolved the idea from watching seagulls seize fish from the waters of Long Island Sound.

Cable says the Germans are going to obscure London with "nebelbomben," or fog bombs. Sounds like carrying coals to Newcastle. Must be a peace move.

Playwright—Now, the hero of this play is a reckless aviator.

Manager—Is it a "one-act" play?—*N. Y. Globe.*

Why not build and donate a monument of sad remembrances to the aeroknockers?

They're nearly extinct.—U. S. M.

Some aeroplanes create all sort of roaring, spluttering racket, then get nowhere; others just start and go and win the race without as much as a puff of blue smoke.

### Flying High

"Remember, my son, that riches take flight."

"I know it, Dad, but maybe the price of aeroplanes will come down after a while, so a poor man can afford to own one."—*N. Y. World.*

### Some Trip

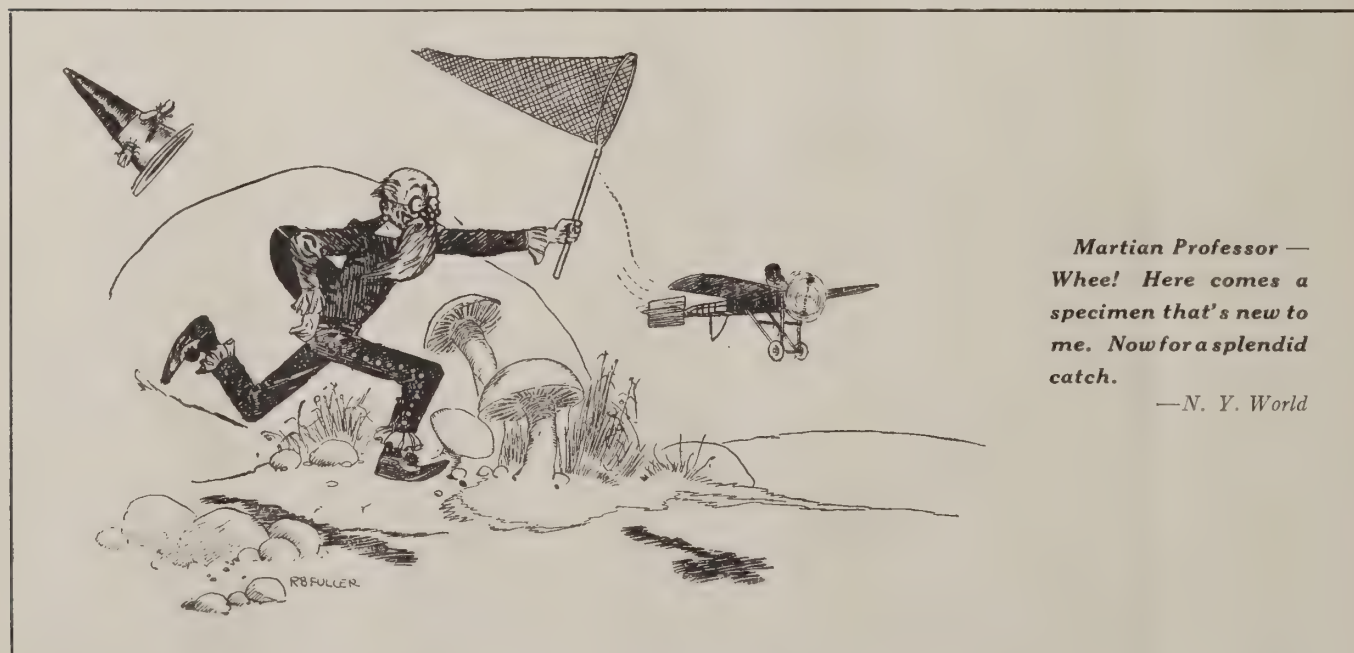
"He had reached a height of 1,500 feet and was starting one of his upside down stunts, when the guide rod on his biplane broke, leaving him powerless to control his machine. To the thousands gazing heavenward it seemed that he had taunted death once too often. A wild shriek rose from the terror-chilled multitude, frozen to the ground and the seats and visualizing the terrible death that seemed a certainty for Thompson.

"And then came his miraculous escape. The great presence of mind that has carried him through so many flights with his only souvenir, a broken nose, which was immediately reset so as not to mar his countenance—admittedly one good to look upon—served him in good stead. Reaching far over the sides, he grasped the planes and gently and gracefully guided his craft to the infield.

"Later he went into the air 1,500 feet, somersaulted or looped the loop nine times, flew down for more than a mile, took his famous death tumble, head downward with engine stopped for 1,500 feet, turned the corkscrew drop and circled the track twice with his machine tilted sidewise and only the straps holding him in the car. It was thrilling in the extreme, and when he concluded with his 'undertaker's drop,' it looked like certain death. But, after falling for a thousand feet like a wounded bird, he caught his machine a short distance from the ground, righted it and stopped in front of the grandstand, cheered and championed by the crowd as the world's greatest aviator."

Such is the story of a DeLloyd Thompson flight, as viewed by a Pittsburg reporter.

Most eligibility rules remind one somehow of the two brothers in the coal business. Both couldn't join the church because one had to stay out to weigh the coal.



**Martian Professor —**  
**Whee! Here comes a**  
**specimen that's new to**  
**me. Now for a splendid**  
**catch.**

—*N. Y. World*



(Continued from page 351)

tapering rearwardly of the planes to form the relatively long narrow tail portion, the forward part of the boat having a normally overhanging scow bow and a bottom in the form of an effective hydroplaning surface extending from the nose of the boat downwardly and rearwardly beneath the bow and thence extending more horizontally rearwardly and terminating at a transverse line approximately beneath the main air planes from whence the bottom of the boat inclines at a positive angle upwardly and rearwardly under the tail portion so that said tail at the rear of the main air plane is carried well above the rear extremity of said forward hydroplaning surface, whereby the boat when planing upon the water at speed is adapted to rock about the rear extremity of said forward hydroplaning surface onto said surface, aerial balancing means, means for driving the boat at such speed as to cause it to rise into the air including an aerial propeller, and aviator control mechanism for governing said aerial balancing and propelling means.

25. In a hydro-aero-machine, the combination of an air plane supporting surface extending transversely of the machine in lifting relation thereto substantially over the center of gravity thereof, a central rigid body boat for supporting the machine on the water and extending well forward and aft of the main air plane, the rear of the boat being in the form of a relatively light tail, the forward portion of said boat being deep and broad as compared with the tail portion to render the boat seaworthy, give it lateral stability and accommodate an effective hydroplane surface, the body of the boat gradually tapering rearwardly of the planes to a sharp stern to form the relatively long narrow tail portion, the forward part of the boat having an overhanging bow and a bottom extending from the nose of the boat downwardly and rearwardly beneath the overhanging portion and then extending more horizontally and in the form of an effective hydroplaning surface rearwardly to a point approximately beneath the main air planes, from whence the bottom of the boat inclines at a positive angle upwardly and rearwardly under the tail portion so that the tail portion at the rear of the main air plane is carried well above the rear extremity of the forward hydroplaning surface, the bottom of said tail portion constituting a reverse hydroplane surface, whereby the boat when planing upon the water at speed is adapted to rock about the rear extremity of said forward hydroplaning surface onto said surface, the machine normally resting on the forward and rear buoyant portions to increase longitudinal stability, and having a cock-pit for the aviator in advance of the main air plane, an upper deck portion extending from the nose of the boat upwardly and rearwardly toward the cock-pit to give the bow of the boat depth and to protect the aviator's body from water spray and wind, the rear end of the tail portion of the boat having mounted thereon vertical aerial and water steering surfaces and aerial longitudinal balancing planes, means including an aerial propeller in the rear of the main plane for driving the machine, and means in the cock-pit for governing said control and aerial propelling means.

26. In a hydro-aero-machine, the combination of a main air plane supporting surface extending transversely of the machine in lifting relation thereto, a rigid floating central body boat having forward and rearward buoyant portions projecting respectively well forward and aft of the main air plane, a hydroplaning surface beneath the boat extending rearwardly and terminating substantially beneath the main air plane, the rear or tail portion of the boat having a bottom inclining upwardly and rearwardly from said termination, a vertical aerial rudder mounted on the stern of said tail portion and extending above the same, a stationary vertical fin in longitudinal alinement with said rudder at the front of the same and tapering downwardly and forwardly toward the tail of the boat, horizontal stationary air planes mounted on each side of said fin and elevated above the tail of the boat and longitudinal aerial stabilizing planes mounted at the rear of said horizontal planes and in alinement therewith, one on each side of the vertical aerial rudder, means including an aerial propeller mounted in the rear of the main air plane for driving said boat at such speed that it will be supported in the air, a cock-pit for the aviator in the boat forward of the main air plane, and aviator control mechanism in the cock-pit for governing said aerial control and driving means, the bow of the boat being free of aerial control and driving means to give an unobstructed forward view.

27. In a hydro-aero-machine, the combination of a main air plane supporting surface extending transversely of the machine in lifting relation thereto, a rigid floating central body boat having forward and rearward buoyant portions, a hydroplaning surface beneath the boat extending rearwardly and terminating approximately beneath the main air plane, the rear or tail portion of the boat having a bottom inclining upwardly and rearwardly from said termination, a vertical aerial rudder mounted on the stern of said tail portion and extending above the same, a stationary vertical fin in longitudinal alinement with said rudder at the forward end of the same, horizontal stationary air planes mounted on each side of said fin and elevated above the tail of the boat and longitudinal aerial stabilizing planes mounted at the rear of said horizontal planes and in alinement therewith, one on each side of the vertical aerial rudder, and aviator control means for governing said rudder and stabilizing means.

28. In a hydro-aero-machine the combination of a main air plane supporting surface extending over transversely of the machine in lifting relation thereto, a rigid central body boat floating substantially the entire machine on the water, and comprising forward and rear buoyant portions, the boat having an overhanging bow with a bottom surface beneath the same inclining downwardly and rearwardly at a relatively sharp angle and sufficiently broad to give effective resistance to the boat's diving when taking the water too perpendicularly, said bottom surface then extending rearwardly more horizontally in the form of an effective hydroplane surface, whereby when the boat strikes the water too perpendicularly said forward bottom surface will cause the boat to glide more horizontally on the said hydroplaning surface, said hydroplaning surface terminating abruptly approximately beneath the center of gravity of the machine from whence the bottom of the boat inclines upwardly and rearwardly along the rear buoyant portion of the boat forming a salient angle with the hydroplane surface, there being a distinct edge formed at the termination of said hydroplane surface whereby the machine at speed may readily plane up to the surface of the water and break therefrom without interference from the bottom of the rear buoyant portion, means including an aerial propeller for driving the boat at sufficient speed to cause it to leave the water, and steering means for said machine.

Signed at Hammondsport, N. Y., this 17th day of May, 1913.

GLENN H. CURTISS.

## GARDEN CITY NOTES

Activity continued at the Garden City Aerodrome during the past week the chief interest centering in the looping flights of Niles, and the breaking of the American passenger altitude record by MacGordon in the Heinrich as described in separate notes in this issue.

Stevenson MacGordon, who is now piloting the Heinrich as well as the Mayo biplane, was particularly active during the past week and was out practically every day carrying passengers. He will shortly have school work added to his daily program for he is to give Blair Thaw and C. P. Riqua flying instructions on the new Heinrich school monoplane. Blair Thaw is having a special tractor biplane built for him by the Huntington Aircraft Company, in which he intends to install his automatic stabilizer.



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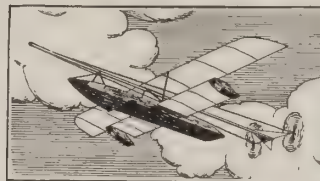
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P. C. Millman, confined his activities to the Schmitt monocoque, pending the Gallaudet tractor being fitted with a double control and larger wings for school and passenger carrying work.

## Chicago Constructors

Messrs. Staddeman and Hoffmann, of Chicago, who have been building a loop-the-loop machine similar to that of the late Lincoln Beachey for Mr. G. Frederick, will now commence the construction of a convertible land and water plane for Mr. L. Z. Howell.



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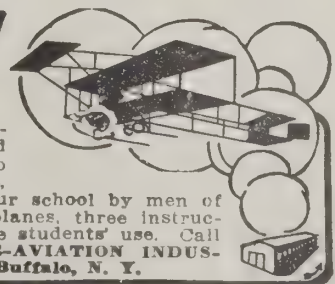
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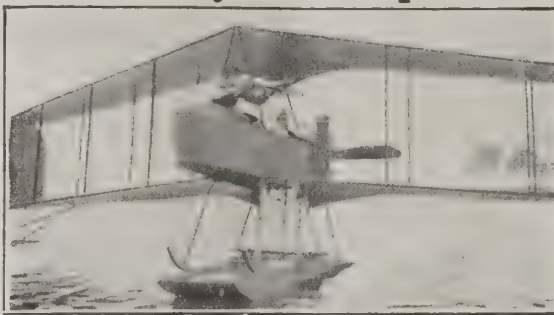


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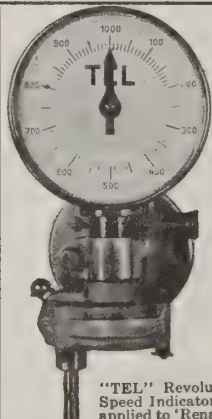
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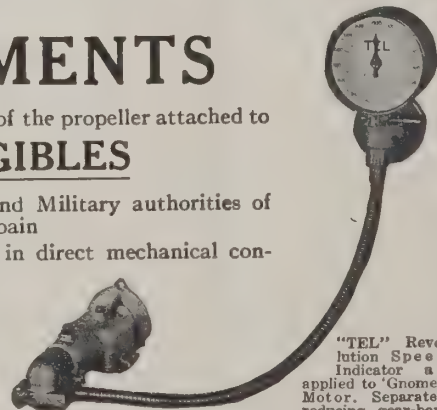
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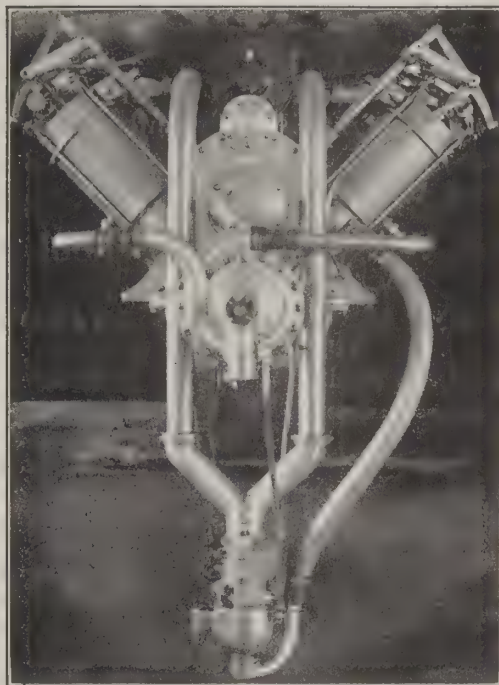


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# AERIAL AGE

## WEEKLY

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Vol. I. No. 16.

JULY 5, 1915

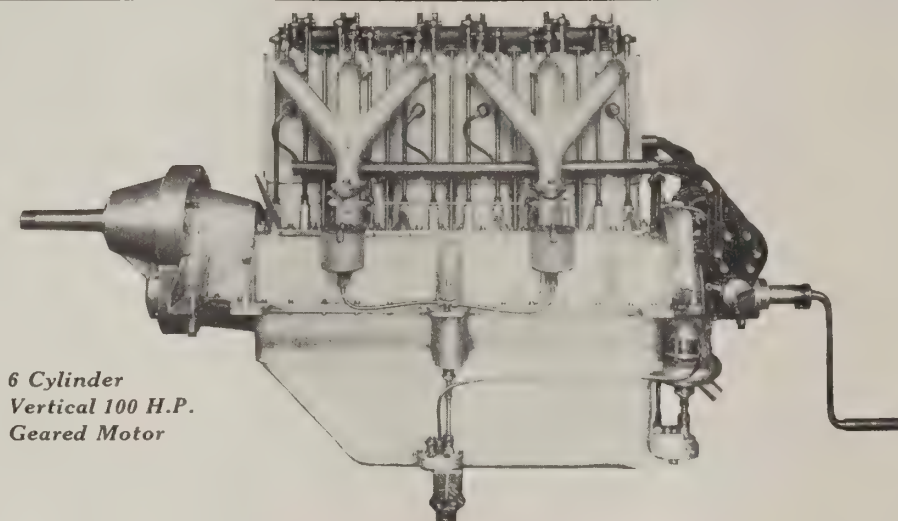
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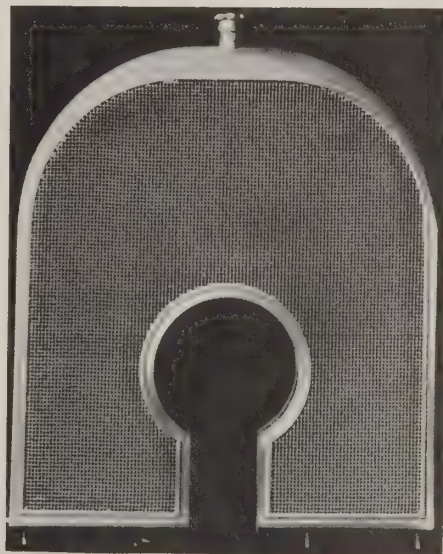
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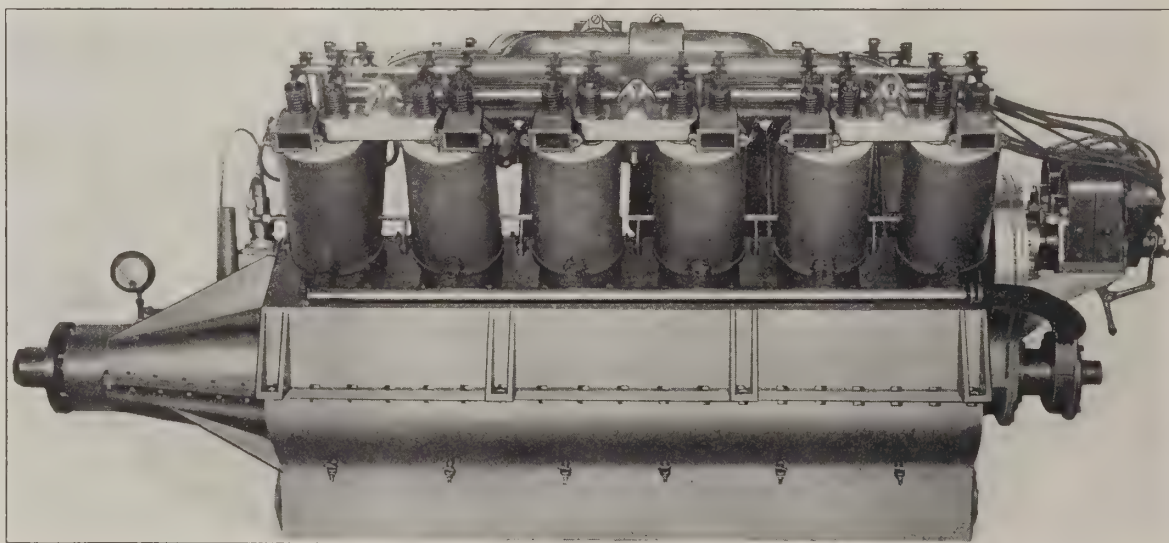
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SUBSCRIPTION RATES  
Domestic, \$4.00 per year  
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PUBLISHED WEEKLY BY THE AERIAL AGE COMPANY, Inc., 116 West 32nd Street, New York City

Entered as Second-Class Matter March 25, 1915, at the Post Office at New York, N. Y., under the Act of March 3, 1879

VOL. I.

NEW YORK, July 5, 1915

No. 16

## England's Need for Aeroplanes—140 Machines Weekly Not Sufficient

THOSE of us who remember that in 1912-1913 England treated aeronautic and aeroplane and aeronautical motor constructors as badly and meanly as the United States Government has been treating American aeronautics, and constructors appreciate the extent of the tragedy of England's inability to meet her need for aeroplanes and motors.

Over one hundred aeroplanes are turned out each week by the factories of the Allies, and about forty aeroplanes are delivered weekly by American constructors. But even that is not sufficient to meet the increasing needs created in part by the numerous new uses which have been found for aeroplanes and in part by the tremendous number required for scouting, spotting artillery fire, reconnoitering along the coasts at important points for submarines, conveying troopships, and making raids.

We will not attempt to moralize—although it is a duty to point out that the United States in the event of war would be in worse conditions, since we lack trained men as well as aeroplanes. We need \$5,000,000 for the Army, \$5,000,000 for the Navy, and \$5,000,000 for the Militia to meet our aeronautical needs.

Coming back to England's need, the London *Daily Express* has struck the new idea of contributing to meet it by organizing an aeroplane factory to be staffed by amateurs. So it called for two hundred amateur mechanics and carpenters. The immediate need is for turners, fitters, machine-men and carpenters, and it is stated that adequate remuneration will be paid.

Now the London *Daily Mail* commenting editorially on the report that the Germans recently became possessors of a new and faster type of aeroplane, urges the British Government to seek the assistance of Orville Wright, the American inventor.

"The Government is being urged to embark on a gigantic scheme for aeroplane construction, with Mr. Churchill in charge," says *The Mail*. "It would certainly be unwise to put such a matter in the hands of a politician or anybody except an expert. In so vital a matter we should employ the best brains in the world. The aeroplane was invented by the brothers Wright. Orville Wright is intimately acquainted with all types. We do not know whether he would be willing to come to England, but we know that he is the world's best authority on aeroplanes and a singularly disinterested and uncommercial inventor."

To ask for Orville Wright after employing the facilities of the Curtiss, Burgess, and Thomas factories may seem somewhat greedy. It may also seem that we could use in the United States and the Possessions the four hundred aeroplanes—and the newly ordered twenty flying boats of the *America* type—which are going, or have already gone, to Europe. But whereas our Government is apathetic and would not support our constructors, we should thank England and the other countries for their support. In case of need we may not now be totally without aeroplanes.

## Poor Progressive U. S. A. Aero Corps!

IF Mr. John D. Spreckels, the owner of North Island, San Diego, where the progressive U. S. Army Aviation Squadron has its headquarters, should decide to end his cordial hospitality, the squadron would have to take to the air and stay there—for the Army owns no suitable grounds for an aviation field. Poor little progressive U. S. Aero Corps! But worry not, relief is in sight. The public is in favor of a \$5,000,000 appropriation for Army Aeronautics—and Congress is realizing that the nation will no longer tolerate disregard of this need.

## U. S. Navy Has Two Aeroplanes to Germany's Thousand

THERE is a wrong impression abroad concerning the efficiency of the navy. The battleships of the fleet are the equal, class for class, of any in the world. The men who serve upon these ships are superior to any others, and the target practice records show these men can shoot straight and hit the mark.—Rear-Admiral William S. Benson.

The dear Admiral might have added that aeroplane for aeroplane we are equal—in quality—to any in the world, but that our navy has, for instance, only two aeroplanes to Germany's thousand. But let us not weep. The General Board will again ask for \$5,000,000 for aeronautics and J. J. Fitzgerald, of Brooklyn, N. Y. and James R. Mann, of Chicago, Ill., who very unwisely disregarded the General Board's request, will not be able to inveigle the majority of Congress to "pass" aeronautics without consideration. Those congressmen who "passed" aeronautics at the last session are sorry and those who were in favor of large appropriations are sore over the imposition of Fitzgerald and Mann.



### The Curtiss Marine Flying Trophy

At its last meeting the Contest Committee of the Aero Club of America approved the rules and conditions for the Curtiss Trophy and \$5,000 in cash prizes, and the event having been sanctioned, the first period of the competition will open on July 4th.

The Curtiss Marine Flying Trophy, offered by Mr. Glenn H. Curtiss through the Aero Club of America, consists of a trophy valued at \$5,000 and \$5,000 in cash to be divided into five annual prizes of \$1,000 each.

Contests for this trophy and these prizes are to be held annually and the conditions for winning the trophy and the yearly prize will be progressive in accordance with the progress made in water flying.

The trophy is open to competition to the members of the Aero Club of America and affiliated Aero Clubs, holders of aviator certificates, civilians and military.

The winner of the trophy the first year, 1915, shall be the member of the Aero Club of America or any of the affiliated Aero Clubs, who, at the expiration of the time set, for the close of the Competition, October 31, 1915, shall hold the record for distance covered between ten hours of one day, and which shall have been established in accordance with the rules given herein-after. He shall receive the Cash Prize of \$1,000 and the Club of which he is a member shall become the record holder of the Trophy, which is to be held in custody by the Aero Club of America.

A Club becomes the owner of the Trophy after five years if it has been won for three consecutive years by its members.

Entry blanks with rules can be had by applying to the Aero Club of America, 297 Madison Avenue, New York.

### The Triumph of Wings

This trophy is emblematic of the triumph of wings over the dominating elements, the Sea and the Air.

Neptune, the Ruler of the Waves, who has controlled all marine craft throughout the ages (the Viking boats of thousands of years ago, Columbus's caravel, the Santa Maria, are shown in the distance) and who still has control over the latest marine craft (some of the representative craft: the Yacht Cup winner, a liner, a dreadnought, and a submarine are shown in the net which he holds in his left hand) rises from the sea and reaches out for the flying boat which is flying over the globe. But this craft rises beyond his reach, and he stands amazed, his hand uplifted in an attempt to grasp the fleeting aircraft. Boreas, the ruler of the Winds, blows drafts of air and also reaches up for the flying boat, but his efforts are ineffective, the aircraft is undisturbed by them.

The flying boat is of the trans-Atlantic type, with cabin and two motors, and besides representing the supremacy of wings insofar as by rising from the water the flying boat escapes the fury of sea-storms, it represents the fact that the aircraft of to-day, owing to its increased weight and speed, is fearless of the wind. It can rise above or below a storm, thus escaping its fury. Boreas stands higher than Neptune, that being its logical place. The idea of Time past is conveyed by the sloping downward of the sea. The flying boat is supported over the globe by a cloud column.

The theme of the trophy is a conception of Mr. Henry Woodhouse, and is being executed in silver by Theodore B. Starr, Inc., of New York. The trophy is to be 3 feet 9½ inches high and 2 feet 7 inches in diameter, entirely in sterling silver, excepting the base which is of onyx.

### America's Backwardness in Aeronautics

*By Henry Woodhouse*

Governor of the Aero Club of America, Author of  
"The Empire of the Air," etc., in *Scribner's Magazine* for July

THE United States, the birthplace of flight, the country that gave to the world the first practical aeroplane, the first hydroaeroplane, and the first flying-boat, is very backward in aeronautics. In military aeronautical equipment it ranks practically last among nations—behind all the first and second class powers and their colonies—very much behind Japan, China, Switzerland, Australia, and Morocco.

Our navy, which boasted three years ago of being the first navy in the world to have an aviation section, has not at this time, three years later, even a complete aviation squadron of ten aeroplanes. The half-dozen naval aviators who hold the aviators' certificates have had no opportunity to gain experience in reconnoitring, have never manoeuvred with a fleet, and do not know what ships and submarines look like from the air.

The United States army has a few more aeroplanes than the navy, about half a dozen. But it also has only very limited resources. The very aerodrome used as aviation centre, at San Diego, is private property and the corps may be turned away any day. The army aviators have never had practice in operating with troops; our artillery has no aerial observers, has never practised firing with aviators as "spotters;" the bulk of officers of the army have never seen an aeroplane, nor have the rank and file. Our coast defense has no aeroplanes; the big guns no aerial eyes. Panama Canal, the Philippine Islands, and Hawaii have no aerial protection.

The National Guard and Naval Militia have had no experience with aeroplanes, and the bulk of the officers in charge of the first line of defense, as well as the rank and file, have never seen an aeroplane.

While American aeroplanes are as efficient as the best European machines, the use has been restricted—our aviators have had no inducement to make long-distance flights and break records. While American constructors of aeroplanes are working day and night to supply large orders of aeroplanes for the warring countries—which proves that American aeroplanes are efficient—only half a dozen American aviators have made flights lasting one hour.

To relieve these conditions the Aero Club of America has started a movement intended to develop aviation corps for the Naval Militia and National Guard of the States, to form an aeronautical reserve which, while being used daily for peaceful purposes, shall be ready for military service in case of need.



# THE NEWS OF THE WEEK



## Orville Wright Says His Health Would Not Permit Him to Accept Commission to Rebuild British Air Fleet

Mr. Orville Wright, aeroplane inventor, in response to an inquiry as to the truthfulness of the statement that a proposal has been made to him by the British Government with a view to erecting for him a huge plant for the purpose of building aeroplanes for use in the war, stated to the New York *Herald* representative that he preferred not to discuss the matter.

Those familiar with Mr. Wright's custom in replying briefly but positively to all inquiries, believe the report is not without foundation. The rumor also says Mr. Wright declined a flattering offer of the Allies because of his conscientious aversion to war. His aged father, Bishop Milton Wright, is known to entertain views of the most decided character against war and the son is said to share these views. For this reason, since the report has gained currency, and since it is not positively denied by Mr. Wright, his closest friends believe the offer is not wholly fanciful. When asked whether he would accept England's proposal as outlined in the British press that he take charge of the movement looking to the erection of a vast aeroplane fleet for that government, he replied in the negative.

"Regardless of any general sentiment I might have as to the propriety of righteousness of war," he declared, "my health is such that I would not feel justified in accepting any such responsibility. While I do not believe the English government will make me any such proposal now, even if it should, I would not accept it."

## Orville Wright Honored

Orville H. Wright received the honorary degree of Doctor of Science at the eighty-ninth commencement at Trinity College at Hartford, Conn., on June 23rd.

## Sturtevant Motors for Navy's Thomas Hydroaeroplanes

The eight-cylinder 140 h.p. Sturtevant aeronautical motor has been specified for the two Thomas seaplanes recently ordered by the Navy. This is the second order which the Sturtevant Company has received for engines for the Navy during the last few weeks.

## Twenty Curtiss Trans-Atlantic Type Flying Boats Ordered by England

Further evidence of the movement toward giant aeroplanes in warfare has been seen recently in this country, in the shape of two important orders for flying boats of the type of the *America*, the trans-Atlantic flyer built for the Rodman Wanamaker expedition. Twenty more of these big craft have been ordered by England from the Curtiss Aeroplane Company and two have been ordered by Spain for her navy.

The twenty boats ordered by the British Admiralty are in addition to the original *America* sold early in the war, and a squadron of twelve ordered at that time and since delivered, and the still larger machine near completion at Toronto. Spain's order was placed as the result of reports showing the successful use of the *America* type by the British navy. Work is well advanced on the two big boats for Spain. The motors are being constructed at the Curtiss works in Hammondsport, N. Y., and the remainder of the aeroplanes at the new Curtiss works in Buffalo.

There have been some improvements in the *America* type recently. The motors by a slight enlargement of the cylinders give slightly over 100 actual horsepower each against about eighty-five horsepower delivered by each of the *America's* two motors. To insure firing, a double magneto has been placed on each motor. Obtaining good magnetos has been a great difficulty for aeroplane builders everywhere. Germany prohibited their export. An American magneto has been developed, however, which is said to have stood a test by a British military commission recently of 104 hours on the bench. Mr. Curtiss has obtained the entire output of these devices for his aeroplanes.

The advantage of the big flying boats is that they can lift and fly with a much heavier load than the ordinary aeroplane.

The *America* was built to carry about 2,400 pounds. Just how much she has lifted is an Admiralty secret, though it is known that she flew very easily with 1,200 pounds. At least half of this in emergency could be put into explosives.

## Sperry Stabilizer Meets With Success in European War

According to advices received by *Aerial Age* the Sperry automatic stabilizer is meeting with great success in the European war. Its success is such that in addition to being placed on the large flying boats of the *America* class built for Britain by the

With Stevenson MacGordon as passenger, Charles Niles exceeded all his former spectacular feats when at the Garden City aerodrome on June 16th, he flew upside down four times, and looped the loop twice, 800 feet above the ground







Overton M. Bounds, who has offered his Sloane Tractor Biplane in connection with the Oklahoma National Guard Manoeuvres

Curtiss Aeroplane Co., the balancer has been ordered for the giant biplane known as the Zeppelin destroyer which Mr. Glenn H. Curtiss is constructing at Toronto for the Admiralty.

It also was learned by *Aerial Age* that the big fighting aircraft, the largest ever built aside from the Russian Sikorsky, is rapidly nearing completion.

Decision to use the automatic balancer on the destroyer is due to the success attending recent flights in the North Sea made by Squadron Commander John Cyril Porte with the *America*, now in the British naval service. Commander Porte reported recently that he owed his life in a squall at sea to the mechanical pilot, which never tired in working the controls. The atmospheric disturbances were so frequent, he explained, that his own strength must have failed in manipulating the big controls of the craft. Morris Titterington, of New York, is now at work in England installing the gyroscope balancers on the entire squadron of British flying boats of the *America* class.

From Italy Mortimer F. Bates reports the flight of an Italian Navy Officer from Pesaro, Italy, on May 30th. He states that in this flight the pilot reached the Austrian position 70 miles distance across the Adriatic, returning to Porto Corsini three hours later. The stabilizer was used during the entire flight. It is interesting to note that the pilot had practically no experi-

ence with the stabilizer or experience in flying and the success of the flight is attributed largely to the stabilizer.

The Sperry stabilizer has been in operation on this machine for two months with perfect success. The Italian Naval Officers in charge of the reconnaissance have expressed themselves as highly pleased with the device.

#### Aeromarine Activity

The Aeromarine Plane & Motor Company announce that they have finished a batch of fifty of their 100 h.p. 6-cylinder geared down motors and have under way a number of 165 h.p. models.

Mr. Harry B. Wise, the general manager of the company, states that the results of the official tests of the 165 h.p. engine will be announced shortly.

#### Wright Airboat Arrives in New York

The new Wright airboat with which Orville Wright hopes to educate New York sportsmen to the joys of water flying through the medium of the Hudson-Wright Aero Company, arrived in New York on June 24th, and was set up and housed in the hangar of Captain Thomas S. Baldwin at Oakwood Heights, Staten Island.

The machine is one of the latest models of the Wright flying boat. After trial flights have taken place at Staten Island, the new machine will be flown up to its permanent quarters at 132nd Street and the Hudson River.

The Hudson-Wright Aero Company is headed by Philip Boyer, a New York banker. Morgan J. O'Brien also is interested in the concern. Offices have been opened at 242 West Fifty-ninth Street, and already thirteen aviation students have registered and will begin training.

A. B. Gaines, who has completed a course of instruction at the Wright school in Dayton, will teach the beginners, as well as act as pilot in passenger-carrying. On Saturdays and Sundays the new craft will be flown at Long Beach, under an arrangement with the management of "Castles-by-the-Sea."

"We are going to give New York a chance to become familiar with the genuine Wright flying boat," said Mr. Boyer. "The only way to do it is to have a machine in daily use in the waters around Manhattan. Passenger-carrying for a moderate fee will do much to stimulate interest in what I believe to be the greatest of sports."

The enterprise of Mr. Boyer and his associates was inspired by the recent purchases of flying boats by rich New Yorkers, and an effort will be made to lengthen the list headed by Vincent Astor and Harry Payne Whitney.

#### Ruth Law Flies at Cincinnati

In a driving rain Miss Ruth Bancroft Law, the well-known Wright aviatrix, made two splendid flights at Cincinnati recently in her Wright, Model B, biplane at a special private exhibition given before members of the Cincinnati Automobile Club and representatives of the press.



A distinguished group of veteran Curtiss pilots who are now holding important positions. From left to right, Raymond V. Morris, manager of the Curtiss Aviation School at California; Wm. E. Daugherty and John Lansing Collins who are in charge of the Curtiss interests in Italy; Charles C. Witmer who is in charge of the Curtiss interests in Russia; and J. A. D. MacCurdy who is the head of the Curtiss Aeroplane & Motor Co. in Toronto, Canada.



**Raymund V. Morris, First to Make  
Entry for Curtiss Marine  
Flying Trophy**

Raymund V. Morris, the head of the Curtiss School at San Diego, Cal., who has just taken a tripe east to put six hydro-aeroplanes and six flying boats through the tests for the Spanish government. Mr. Morris recently married Miss Grace Gibson, but his marriage will not interfere with his aviation activities. The photograph shows Mr. Morris' method of tying a handkerchief to his helmet for use in wiping his goggles when making long flights



**Heinrich News**

The Heinrich school opened June 20th with six pupils: Mr. R. F. Mitchell, Mr. Wm. Shultz, Mr. K. Arai, Mr. Blair Thaw, Mr. Chas. Requa, and Mr. Ruttan. The machine used for school work is the 35 h.p. Anzani motored monoplane, which has just been thoroughly overhauled. Mr. George Page has been made assistant instructor of the school.

Mr. Page and Mr. Arthur Heinrich have been making exhibition flights, during the past week, on the school monoplane. The military tractor biplane, E2, created an official American altitude record for pilot and two passengers, on Tuesday, June 22d, when with Mr. Stevenson MacGordon at the controls it climbed to 6,496 ft. The passengers were Mr. Arthur Heinrich and Mr. R. F. Mitchell. The weight of passengers and pilot totaled 466 lbs., and the flight was started with 15 gallons of gas and 7 gallons of oil on board. The barograph was officially sealed by Mr. Alan R. Hawley, president of the Aero Club of America, so the record is official. On the following day this was bettered by a climb to 7,500 ft. with two on board. This, however, was not official. On Friday, June 25th, MacGordon was up for an hour and forty minutes with two on board. The weight totaled 813 lbs. and the height reached was between six and seven thousand feet. It is proposed to continue these altitude flights, and to make a substantial record for America. The plant at Freeport, L. I., now employs 34 men, and has been equipped with the latest and best machinery for wood and steel work, brazing and welding. Experiments on the various forms of wing ribs and turnbuckles have been made, and will be reported later.

**ST. LOUIS NEWS**

By H. Drake Harkins

The Polyplane Motor and Metal Mfg. Co., recently organized with a capital stock of \$100,000, has found its chief market in the demand for Krauselium. This is an extremely light metal with a specific gravity never over 2.20 and with tensile strength up to 40,000 lbs. Several motor manufacturers use the metal for pistons and crank cases; one of the largest marine engine constructors in the United States is favorably considering its use for cylinders; and the Polyplane Company itself has a 75 h.p. aeroplane motor weighing but 175 lbs. complete. Cylinders, pistons, crankcase, and all parts except connecting rods, crankshaft, and bearings are made of the new metal. The motor is highly successful and turns a 7 1/2-foot diameter by 10-foot pitch propeller at 1,600 R.P.M.

One of the most valuable features of the metal is its resistance to corrosion by salt water and hot gases. (Samples left in seawater for seventeen months merely attain a superior polish, while other alloys are eaten through. Likewise, cylinders and pistons are not pitted by extremely hot gases).

**Solbrig Flying at Davenport**

O. A. Solbrig, of Davenport, Iowa, a former graduate of the Curtiss Aviation School at North Island, has constructed a Curtiss type machine of his own with which he has been making numerous successful flights in and around Davenport. He is now planning to enter the exhibition business.

*The Wright Aviation Baseball Team at practice on the flying field at Dayton. In the photo are H. M. Rinehart, pitching; M. Combs, batting and Alen McRae catching*





## CICERO NEWS

Curtiss La Q. Day, better known as Satan, the University of Illinois boy aviator, has been doing fine work with his baby Benoist tractor. The little twenty-six foot tractor is powered with a six-cylinder RADIAL motor which gives it a speed of seventy miles an hour. The machine complete weighs five hundred pounds. Young Day, who was formerly a Wright and Curtiss pilot, has made several fifteen-minute flights at an altitude of one thousand feet within the past few days. On Saturday afternoon, just as the 500-mile auto race in the new Speedway was drawing to a close, Day flew over from Cicero and played above the racers for fifteen minutes. He gave the auto fans an excellent exhibition of steep banking, spirals, and perpendicular drops, diverting their attention from the speeding cars. Then he flew for home. On July 3, he gives an exhibition at Anna, Illinois.

Castori has been making some fine flights in the Pontowski-Lichorsik tractor.

Hensil's Wright biplane, piloted by Weiner, has been flying regularly of late.

Curtis C. Pritchard has been making some nice hops in Selleck's Anzani-Nieuport. Crutson has also been making jumps in his Curtiss. Wells has been out for some ground work in his tiny 18 h.p. tractor. His machine complete weighs only 150 pounds. Buess and Laird are also getting their small tractors ready for flight.

Partridge and Kellar have almost completed their work on Art Smith's new looper. They have delivered Miss Katherine Stinson's loop-the-loop tractor, in which has been installed the Gnome 80 used by the late Lincoln Beachey. Aviator Castori made a fine flight in the machine one evening last week.

Day's flight to the Auto Derby, which was the feature of the week, lasted about forty minutes. Coming back he was over 2,500 feet high, and when in sight of the field he shut off his motor and made a six-minute glide to the ground.

Rumors are afloat that Cicero Field is soon to be no more. The eastern part of the grounds has been taken up by flats, and small trees have been set out toward the west, almost as far as the hangars. The rest of the land will soon be used for more buildings, and it is probable that within another month the bird-men will have to take wing and migrate to new soil. The oval of the new Speedway has been suggested, as has also been the land along the shores of Lake Calumet, and out at Pullman.

## Flying Boat Demolished

Without Injury to Pilot or Passenger

Aviator A. C. Beech, the well-known pilot, who is a contributor to *Aerial Age*, had his first serious accident after about five years of flying. As "A. C." has the reputation of being one of the most careful, but one of the nerviest in the business, we will let him tell his own story, which is as follows:

"I had finished a month's contract at Tybee Island, Ga., except for one flight. The wind was blowing about 30 m.p.h. I had been up in 40 m.p.h., winds from the same direction in the same place and saw no reason to hesitate when the time came to fly according to a pre-arranged schedule. My passenger was a photographer who weighed about 110 lbs. As I had "decolle" with two passengers averaging 135 lbs., I had plenty of reserve. The line of shore and spectators was north and south with a strong wind from the south.

"I started south, circled to the north and had almost finished the flight when suddenly as I was flying north with the wind, of course, behind me, the boat dropped from about 500 feet to 20 in a very short distance of flight. She still continued to

settle after the sudden drop. I held her steady realizing that the wind had suddenly increased behind me. I might say for the benefit of those aviators whose experience is confined to land machines, that owing to the low center of gravity, the high center of thrust, the immense amount of quille surface below the center of gravity, etc., a flying boat cannot be 'turned round on a dime.' The wind had risen to over 40 m.p.h., I should judge when we were driving along about 6 feet from the water. There was a big swell and frequently it seemed that the rollers would come up to us. I looked at my passenger's face. He was totally unconscious of trouble and seemed to be enjoying himself like a small boy. Suddenly I felt an almost imperceptible downward trend, the crest of a breaker licked us and I 'cut the motor.' As soon as the boat touched the water she crumpled up in front like an egg shell. I presume we were making 100 m.p.h., at a conservative when we struck. We struck in a slightly stalling position, but the water at that speed seemed to be a solid.

"As soon as she struck the tail whipped over like a flash. The passenger and myself were carried under. I dived clear of the wreckage from underneath the boat and rose to the surface practically unscathed. That is, the doctor who examined me later did not consider that any of the slight bruises needed any dressing. My passenger flashed up a few seconds later. We were then about two miles off shore. The first five of the seven water-tight compartments had been crushed, the remaining two held the machine afloat. A subsequent examination showed that the motor had not left its mounting.

"Had there been any means available to tow the wreck ashore I might have saved enough to repair. But she drifted into the surf and with the exception of the motor, was totally demolished.

"The lesson to be derived from this accident, and all accidents have their lessons, is, that whenever a flying-boat operating in a wind begins to lose altitude, it is time to head into the wind unless the altitude is a safe one.

"The hull was perfectly sea-worthy as I had done considerable passenger-carrying from the ocean beyond the surf, having had the passengers exchanged with surf boats. I had also driven through the surf with a passenger weighing 250 lbs. into a 'slew' without the slightest damage."

## PENNSYLVANIA NEWS

The regular meeting of the Club was held at the Bellevue-Stratford, Friday evening, June 18th, President Joseph A. Steinmetz, Chairman. There was a large and enthusiastic attendance. The chairman reported that a committee had visited League Island on June 16th for the purpose of inspecting a plot of ground that had been set apart by the Government as the Pennsylvania Aeroplane Station and had found it admirably adapted for the purpose.

An invitation from the Commander, C. B. Price, U. S. N., to the members of the Club and their friends to visit the Pennsylvania Aeroplane Station at League Island, Saturday, July 3rd, by Government tug, was accepted and a Committee was named to complete arrangements.

A letter inviting the participation of the Club in the National Balloon Race next October by Mr. Alan R. Hawley, Chairman of the National Contest Committee of the Aero Club of America, was held over for further consideration.

With the object of expediting the business of the Club, sub-committees were outlined as follows:

Press	Military
State	Legislative
Municipal	Law
Naval	Finance

(Continued on Page 382)



Panoramic view of the Aeromarine Plane & Motor Company Plant at Avondale, New Jersey



# "Military Aeroplanes"

A Review of Mr. Grover C. Loening's Latest Book

Of most aviation fields, there has long been evident, the lack of a textbook for the use of aviators, which would convey to them, in readable form, the necessary information on their aeroplanes which would lead to a better appreciation of these delicate machines. Military and naval aviators are daily entrusting their lives to machines they are not always thoroughly familiar with, and are often planning and attempting to execute performances, without that painstaking preparation and study, that is so important an element of success. It is but natural, therefore, to find those who really use aeroplanes, desirous of acquiring knowledge and information thereon—seeking it, however, in the practical language of the aviation field, with no more theory or formulae considered, than would be essential to a full and clear understanding, of the subject, so as to be able to appreciate and predict the results in operation and the stresses that the various air pressures may be expected to give. In "Military Aeroplanes," the author has aimed at supplying a textbook of precisely this nature, by gathering together information acquired in an extensive practical experience, in a form, based in its composition on questions asked and information sought by military aviators.

The practical atmosphere and matter of fact nature of "Military Aeroplanes," may largely be attributed to the fact that this work was written on the field, at the largest aviation centre in this country, at San Diego, and with ample facilities for inspection, test, flying and discussion.

A glance at Mr. Loening's new work, shows it bristling with information, a great deal of which, particularly on the construction of aeroplanes has never before been published, and the general nature and composition of the book gives evidence of considerable care on the part of the author in presenting facts and explanations in a logical and consecutive order, thus avoiding the error so many authors on aviation have made, of presenting a collection of personal opinions.

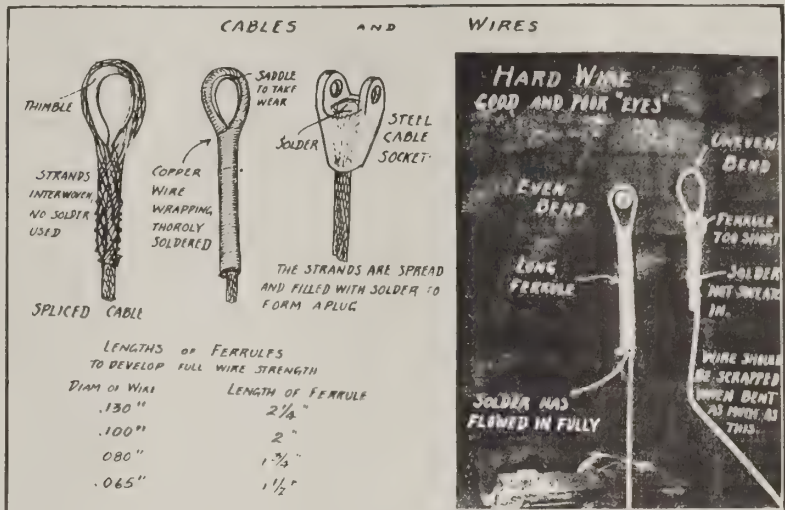
In the opening chapter, the distinctions between airships and flying machines are clearly stated and illustrated, and flying machines are in turn sub-divided into several types, each of which is defined. Having thus fixed the aeroplane, as one means of navigating the air, the author in Chapt. II., proceeds to take up the different types of aeroplanes—tractors, pushers, biplanes, monoplanes, aeroboats, hydroaeroplanes, etc., giving many illustrations, with exceedingly clear descriptive caption of the various types and their parts, thus giving an intelligible and valuable explanation of the general features of these machines.

This is followed by a chapter inserted merely for reference, for the particular purpose of refreshing the mind of the reader, in clear and simple language, on those elementary matters of formulae, mechanics, energy, power and stresses, which are later to be used in an exceedingly limited way, in the acquirement of the proper understanding of the aeroplane itself. The policy of the author of "scaring" the non-technical reader at the outset and then letting him down so easy, by a chapter which can readily be omitted, and used only for reference, is very praiseworthy.

The detailed study of the aeroplane then begins by a consideration of the nature of air, and of air resistances and their variations with speed, and the values of the resistances for more than fifty different shaped objects are given in full, including discs, cylinders, struts, wires, streamline bodies, wheels, etc.

In this and subsequent chapters, full reference is made and information given in our units on the Eiffel, N. P. L., and Goettingen laboratory results, for available use in the field.

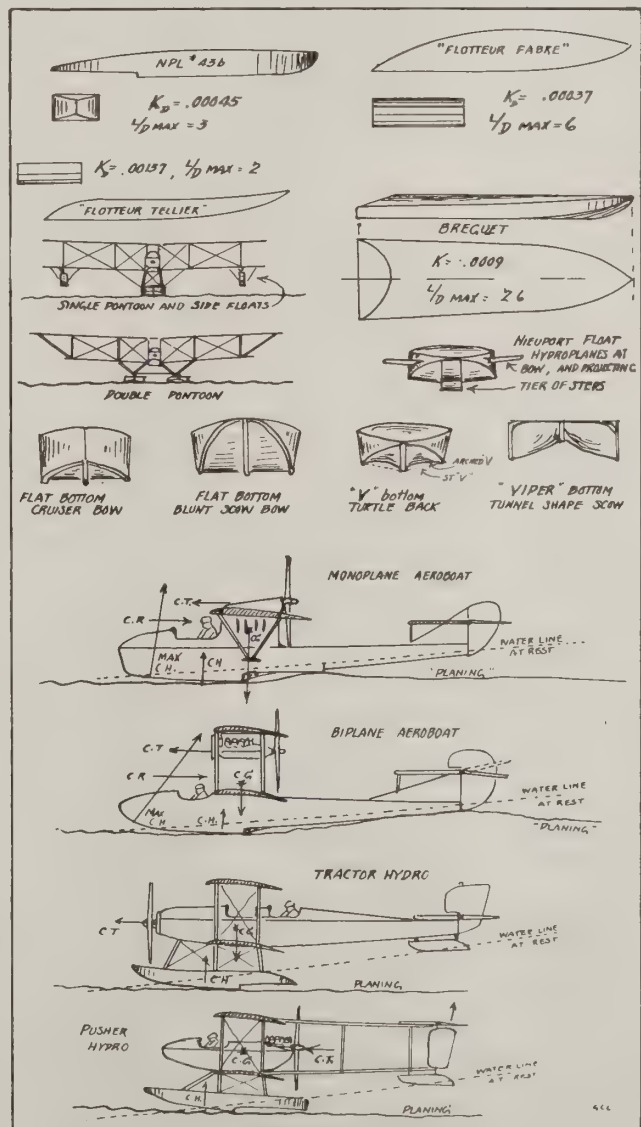
Inclined surfaces are then taken up and the resolution of the air pressures into Lift and Drift, very fully and clearly explained. Values of these pressures for flat and cambered surfaces are given, and enable the forces on aeroplane bodies, rudders and elevators, to be determined. A short discussion of aerodynamic theory is



then given, for reference, to emphasize that the resolution of air pressures along the directions in which they act, is the correct fundamental conception of aerodynamics.

Aerofoils or aeroplane wings themselves are next considered, and in a way that is commendably complete. The characteristics of the various features of wings are studied and twelve of the most modern types of sections are taken up in detail, accompanied by excellent charts showing the corrected Lift, Drift and centre of pressure movement of these sections, in full.

(Continued on page 382)



Reduced reproduction of one of the many interesting illustrations in Mr. Loening's book



# AEROPLANE ENGINES\*

By Neil MacCoull, M. E.

This is the third part of a paper read by Mr. MacCoull before the Society of Automobile Engineers at Detroit, on June 16th.

The remainder of this paper, with the exception of the part dealing with those engines which have already been described in these pages, will be published in subsequent issues of *Aerial Age*. The engines referred to, with the dates of the issues in which they were described, are as follows:

Aeromarine.....	June 7	Gyro.....	April 19
Ashmussen*.....	April 26	Johnson.....	May 24
Curtiss*.....	April 5	Rausenberger.....	April 26
Duesenberg.....	May 10	Sturtevant.....	Mch. 29; May 3
		Wells Adams.....	April 19

\* Indicates illustrations only.

## Rotary and Sleeve Valves

The best remedy of all for the unreliability of poppet valves at high speeds will be to dispense with them entirely by the use of some type of rotary or sleeve valve. The most serious objection to some of the better valves of these types as used on automobiles is their leakage, for it is difficult, if not impossible, to make them as tight as an ideal poppet valve. The question of leakage is, however, important only when maximum torque is required at low speed. This is a condition never found on an aeroplane because the propeller torque varies as the square of the r. p. m. and consequently at low speeds there is almost no torque. At high speeds where the propeller torque is high, experiments have shown that a little valve leakage has practically no effect on the engine torque. Hence aeroplane service is far more favorable to rotary and sleeve valves than automobile service. It should be observed, however, that many valves of these types require a heavier construction than the poppet valve.

## Inertia Forces

Aside from valve trouble, the most serious limitations to the speed of an engine are the wear, and, with certain cylinder arrangements, the vibration caused by the reciprocating inertia forces; in other words, the forces necessary to start, stop and reverse the pistons and the reciprocating parts of the connecting-

\*Continued from Page 347, June 28, 1915

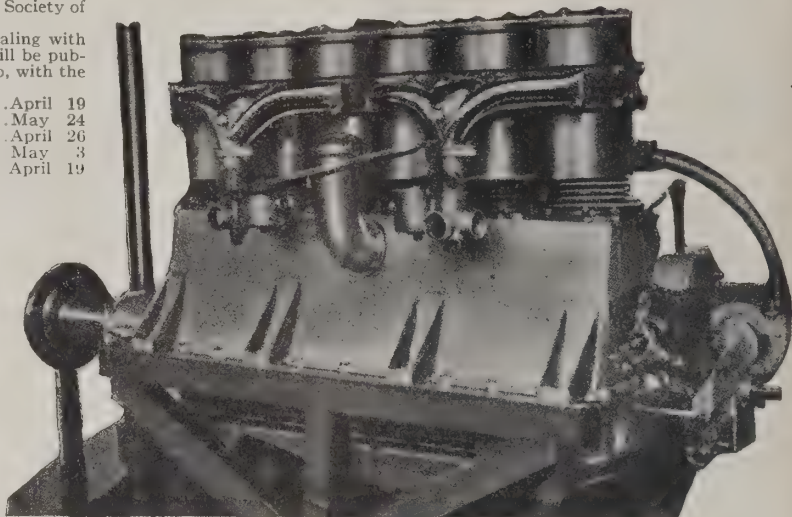


Fig. 25.—120 H. P. Sleeve-Valve Argyll Engine. Notice the method of attaching the intake and exhaust manifolds. They are formed in two halves, and held together so as to encircle the cylinders

rods. These forces will lie between the values given by the two following equations:

$$F = \frac{K_5 P V}{f} (1 + a), \text{ and} \quad (1)$$

$$F = \frac{K_6 V^{\frac{3}{2}} \sqrt{P}}{f} (1 + a). \quad (2)$$

## PROOF OF EQUATIONS (1) AND (2)

Inertia forces may be represented by the equation:

$$F = 0.0000142 W N^2 s (\cos \theta + a \cos 2\theta)$$

in which:

$F$  = inertia force for one cylinder in pounds,

$W$  = weight of the reciprocating parts of one cylinder (piston and part of connecting-rod),

$N$  = revolutions per minute,

$s$  = stroke in inches,

$a$  = angularity of the connecting rod =  $\frac{\text{crank radius}}{\text{rod length}}$

$\theta$  = position of the crank past upper dead center in degrees. Since it is the maximum value of this force which is of interest in this discussion, the equation may be rewritten:

$$F = 0.0000142 W N^2 s (1 + a) \quad (6)$$

It is now to be shown how the values of  $F$  will differ between similar engines at different piston speeds. The value of  $W$  may be taken from equation (3).

The value of  $N$  may be obtained from

$$V = 2 N s$$

which is the customary way of figuring piston speed. Hence,

$$N = \frac{V}{2s} \quad (7)$$

and

$$N^2 = \frac{V^2}{4 s^2} \quad (8)$$

Substituting equations (3) and (8) in (6),

$$F = K_3 \frac{d^3 V^2 s}{s^2} (1 + a) \quad (9)$$

where  $K_3$  is a constant.

$$\text{Since } f = \frac{s}{d}, \quad d = \frac{s}{f} \quad (10)$$

and

$$d^3 = \frac{s^3}{f^3} \quad (11)$$

where  $f$  = stroke-bore ratio =  $\left( \frac{\text{stroke}}{\text{bore}} \right)$

Then (9) becomes:

$$F = K_3 \frac{s^3 V^2}{f^3 s} (1 + a) = K_3 \frac{s^2 V^2}{f^3} (1 + a). \quad (12)$$

Making provision for variable piston speed in the N. A. C. C. horsepower formula, which assumes a piston speed of 1,000 feet per minute,

$$H. P. = \frac{d^2 (\text{No. of cylinders})}{2.5},$$

the equation becomes:

$$P = \frac{d^2 V}{2500} = \frac{d^2 V}{K_4} \quad (13)$$

where  $P$  = horsepower per cylinder,

$d$  = cylinder diameter in inches,

$V$  = piston speed in feet per minute, and

$K_4$  = a constant.

Since  $d^2 = \frac{s^2}{f^2}$  from equation (10), this may be written:

$$P = \frac{s^2 V}{f^2 K_4} \quad (14)$$

Substituting in equation (12),

$$F = \frac{K_5 P V}{f} (1 + a). \quad (1)$$

If the value of  $W$  had been taken from equation (4) this equation would have read

$$F = \frac{K_6 V^{\frac{3}{2}} \sqrt{P}}{f} (1 + a). \quad (2)$$

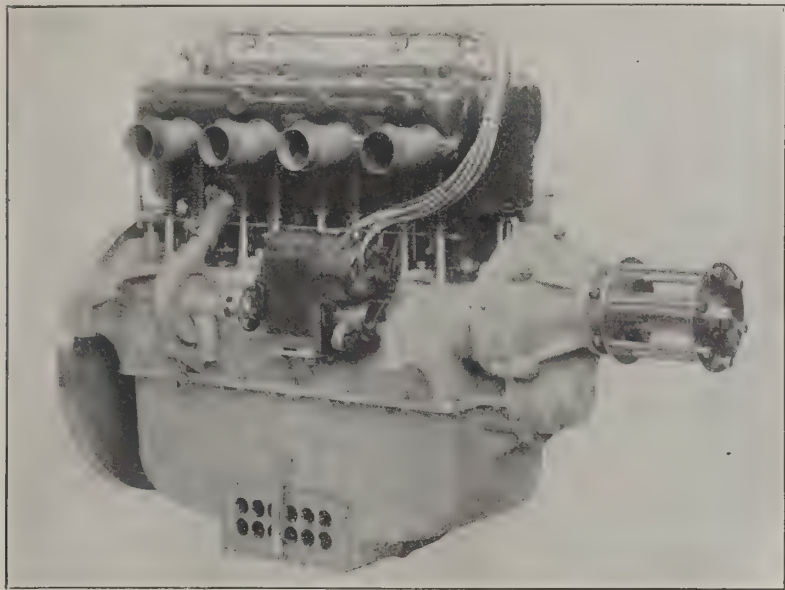


Fig. 32.—100 H.P. Four-Cylinder Sturtevant "E-4," with Geared-Down Propeller-Shaft and Four Valves to Each Cylinder, Two on Each Side. Air to the carburetor is drawn through the tubes shown in the sump, cooling the oil and warming the air

In which:  $V$  = piston speed in ft. per min.  
 $P$  = horsepower per cylinder,  
 $f$  = stroke-bore ratio,  
 $K_5, K_6$  = constants, and

$$a = \text{angularity of the connecting-rod} = \frac{\text{crank radius}}{\text{rod length}}$$

The first equation is based on the assumption that all similar dimensions of any equivalent parts of two engines which differ only in size, have a certain ratio to each other, e. g., if the diameter of the piston be doubled, then its length and thickness will be doubled also. Granting this assumption, the volumes of any two equivalent parts of similar engines will vary as the cube of any similar dimensions such as the cylinder diameter. Since weight is proportional to volume, the above may be expressed by the equation:

$$W = K_1 d^3 \quad (3)$$

The second equation will be true if the thickness of metal in any part is determined by foundry or machining requirements only, rather than by strength, and will be constant, not varying with the other dimensions. In this case the volumes of any two equivalent parts of similar engines will be proportional to the areas of their surfaces, which vary as the square of of

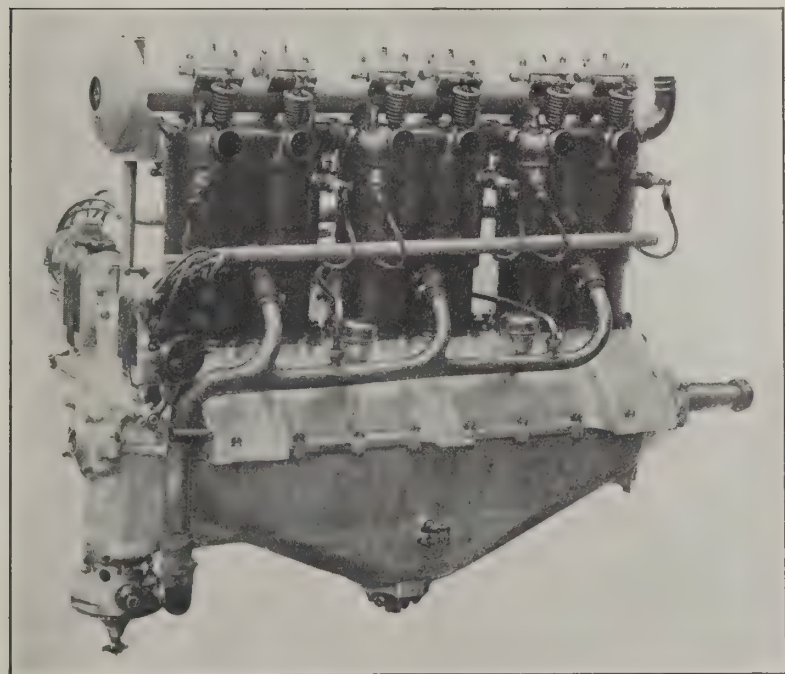


Fig. 22.—100 H.P. Mercedes with Overhead Cam-Shaft and Steel Cylinders  
Notice that the water outlets are in series

any similar dimensions. This may be expressed thus:  
 $W = K_2 d^2 \quad (4)$

As any part of an engine is made up of parts which may be classed under one or the other of these assumptions, its weight will lie between the values given by equations (1) and (2).

The most interesting fact revealed by these equations is that for a given power and piston speed the inertia forces in an engine may be reduced 50 per cent. by doubling the stroke-bore ratio. Unfortunately a long-stroke engine is heavier than one with a short stroke, because of the larger crankcase and longer cylinders required. Just what is the best value of the ratio is one of the fine points of design which will probably not be settled for some time to come. Judging from automobile practice it will probably lie between 1.5 and 1.8.

As one would expect, the inertia forces increase with the piston speed, possibly a little faster in some designs,

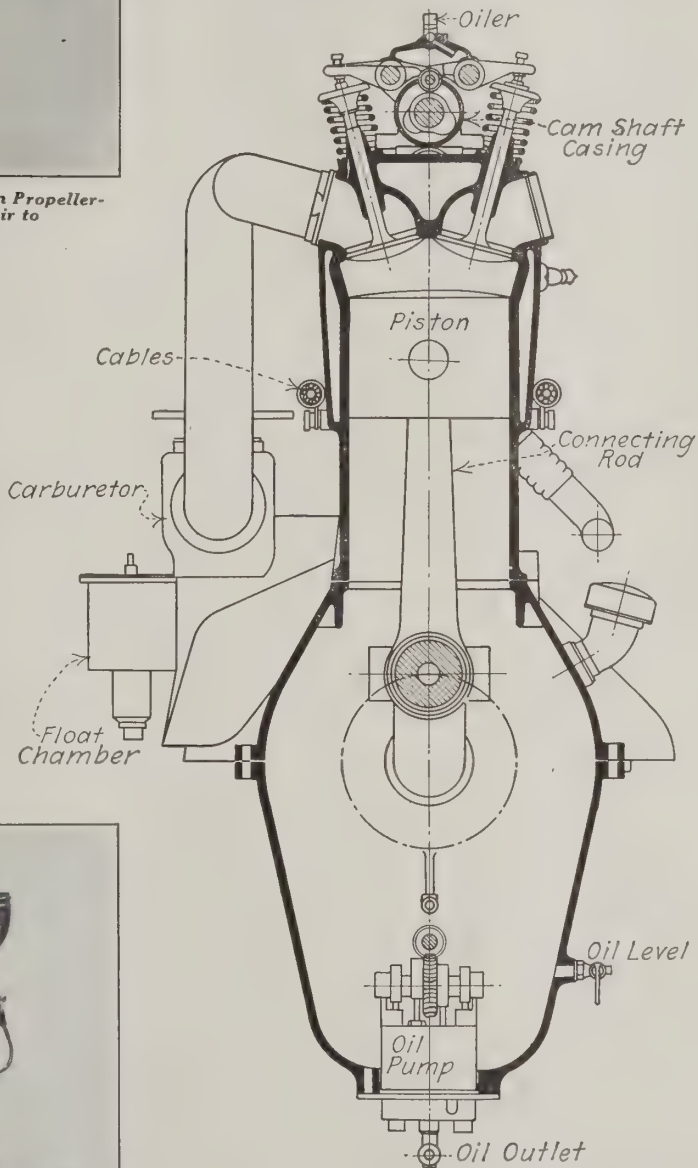


Fig. 21.—Cross-Section of the 100 H.P. Mercedes

but this need not be very serious if the designer takes it into consideration and provides sufficient bearing area. Since these forces are directly proportional to the weight of the reciprocating parts, it is very important that they should be made as light as possible. It is not often that the connecting-rods are much heavier than necessary, but an appreciable saving may frequently be made in the weight of the piston by machining the inner surface. This is expensive but worth the price. Another considerable reduction in weight may be made by using a lighter metal than iron, such as aluminum hardened by traces of copper and tungsten. Such an alloy has been found to be an excellent bearing material and is stronger than cast iron, though it weighs less than half as much.



## The 1915 Benoist Flying Boats

By Walter H. Fhipps



**T**HE Model "A" which is the subject of the accompanying drawings and photographs is a two-passenger type equipped with a 75 h.p. engine which is mounted half way up in the hull, instead of on the bottom as was the case in the original Benoists.

This arrangement, which has been repeatedly advocated by the writer for some time past, hits a happy medium between the engine in the hull type and the engine between the wings type, producing a craft which is both seaworthy and stable in the air.

Aside from the placing of the engine half way up in the hull the new Benoist is chiefly interesting on account of the shape of the hull itself. This as may be seen from the accompanying drawings and photographs is more boat like than the former models and the cockpit is larger and roomier. In place of the former canvas hood covering the new craft has a substantial V-shaped hood which adds greatly to the strength and appearance of the machine. An innovation in flying boat hull construction which is to be found on the new Benoist is the tapered shape of the stern, which has a section which is much broader at the base than at the top. Besides saving considerable weight this shape eliminates the stern clinging to the water owing to waves dashing on the top.

### Hull

The hull is of the single step type, roomy in front with plenty of freeboard and sufficient length of nose to enable it to stand a fair sea without shipping water. The hull proper is constructed of spruce planking with the upper works covered with mahogany. The part of the boat from the nose to the step is constructed of two layers of  $\frac{1}{4}$ -inch spruce planks with canvas between them, while the rear is built of single  $\frac{3}{8}$ -inch spruce planks, reinforced, on the inside, at the seams by thin spruce battens. The sides are made of  $\frac{3}{8}$ -inch spruce laid on in the same way.

The step is situated some distance behind the centre of pressure being exactly 30 inches in back of the front beam and measures 5 inches in depth. The cockpit is arranged for two people, seated in front of the main planes. The motor is mounted in back of the occupants just between the main beams of the wings and is placed half way up in the hull so that the cylinders protrude above the deck. The complete hull, which is divided into 5 watertight compartments is finished in Valspar, three coats inside and six coats outside.

### Planes

The planes of the Model "A" total 360 square feet supporting

surface and are made up in sections with 7 feet of their trailing edges cut away top and bottom on each side for the double ailerons. The total spread is 36 feet, the chord 5 feet and the gap 6 feet. There are three sets of struts on each side spaced 5 feet 6 inches apart. Contrary to usual practice the two centre sets of uprights instead of running straight up to carry a small centre panel are sloped inward so that they meet at the top to form a sort of triangular pylon to which the top planes attach direct in the centre. Besides doing away with the top centre panel this arrangement greatly stiffens the whole structure and forms an excellent support to carry the propeller shaft and transmission.

Wing tip floats of the shape shown in the photographs serve to keep the tips of the planes from dragging in the water and help to balance the craft when taxiing.

### Controls

The ailerons which consist of four in number, attach to the outer extremities of both upper and lower wings and measure each 7 feet by 1 foot, and are operated one set up the other down in the usual manner.

The elevators, which attach to a very small tail plane, are of very generous dimensions and measure each 3 feet 6 inches by 4 feet 6 inches. They operate in unison by a fore and aft, movement of the control.

The rudder which is partly balanced is so shaped that its lower portion which is constructed of wood planking, drags in the water at low speeds and acts as a water rudder. The air rudder itself measures 4 feet 1 inch high by 5 feet greatest depth. The whole tail arrangement is supported on an ash upright extending from the stern of the hull and is braced both front and rear by steel tubes.

The control mechanism consists of either the Benoist modified, Farman system or the regulation Deperdussin type as preferred.

### Propulsion

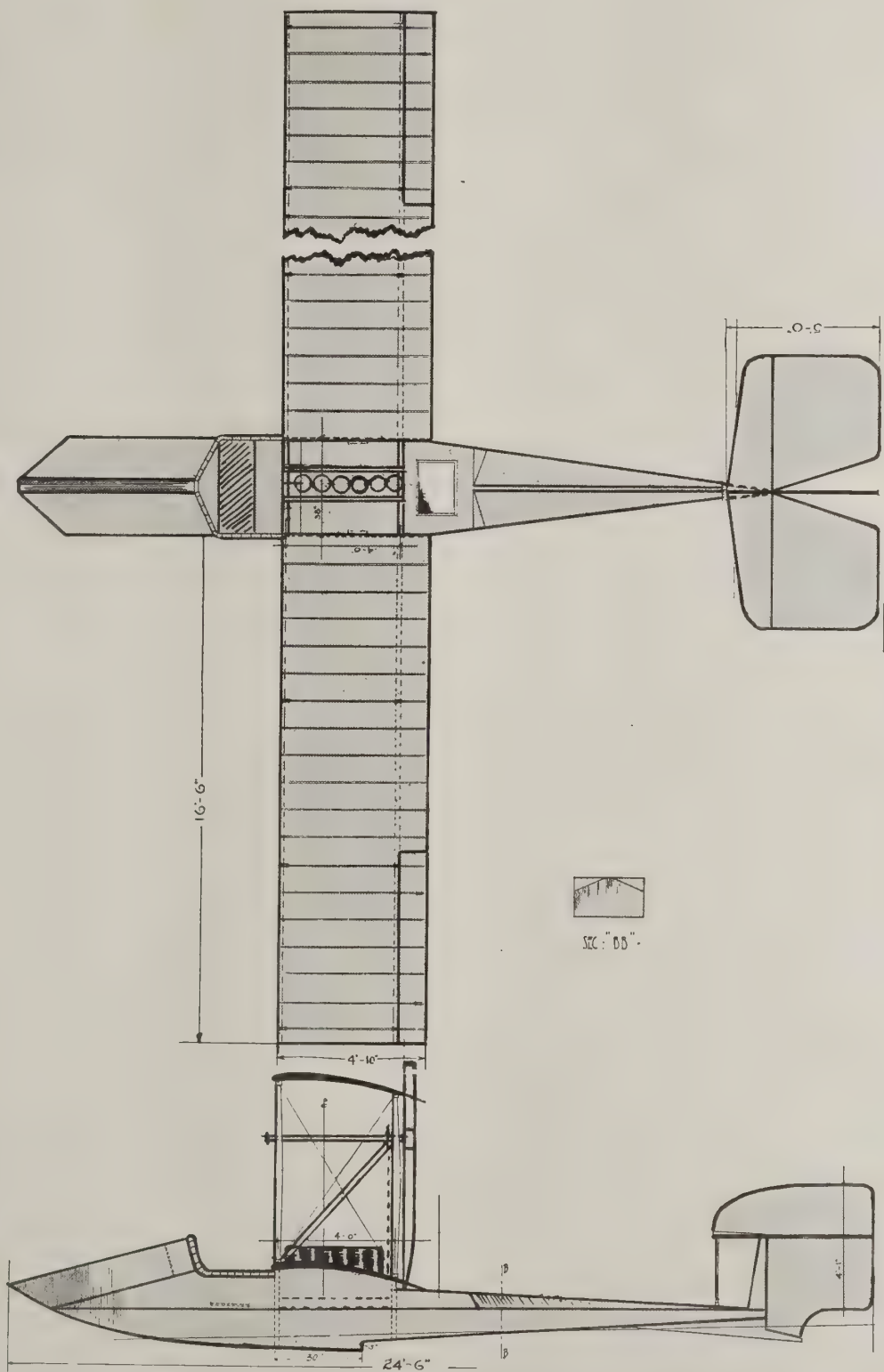
The power plant consists of a 75 h.p. six cylinder water-cooled motor mounted half way up in the hull and driving the 8 feet 6-inch propeller mounted high up between the planes through a chain transmission. Where it is desired to carry four passengers the machine is fitted with a larger motor which can be fitted between the planes when desired.

(Continued on Page 382)



The New Benoist Flying Boat on the Beach Preparatory to Making a Test Flight

Scale Drawings of the 1915 Benoist Flying Boat





# Army and Navy Planning Organization

**P**LANS of the War and Navy Departments for the eventual organization of fifteen aviation squadrons for the National Guard of the states and twenty-two squadrons for the Naval Militia, have been communicated to the Aero Club of America, which has been working in the past three months to create interest in aeronautics and to develop aviation corps for the National Guard and Naval Militia of each state, so as to form a substantial aeronautical reserve.

The Navy Department offers to loan aeroplanes to the Naval Militia, and the realization of the plan depends now almost entirely upon how quickly the Aero Club of America and its twenty-five affiliated Aero Clubs get volunteers to form the corps.

The offer of the Navy Department to loan aeroplanes with which to start the formation of the corps in the Naval Militia has just been made in an official communication signed by Captain Mark L. Bristol, in charge of the Aeronautical Department of the Navy, approved by Secretary Daniels and transmitted by Commander F. B. Bassett, Jr., of the Division of Naval Militia Affairs at Washington. In accordance with the Act to Promote the Efficiency of the Naval Militia, approved by Congress at the 63rd Session, the Secretary of the Navy has authority to establish an aeronautic force for the Naval Militia, but there is not available the necessary fund to organize full size aviation squadrons. But the Navy Department, the official communication states, will loan aeroplanes for the use of the Naval Militia under the status of "small vessels," "outright" loan, under a similar agreement; the loan of aeroplanes to be upon a basis of two aeroplanes for a complete section having not less than four officers and twelve men, and one aeroplane for anything less than this.

The Navy Department also offers to train the officers and men of the Naval Militia enrolled for aeronautic duty, and urges that the officers and men be sent to an Aeronautic station of the Navy or to an aeronautic ship for training. They will at the same time, receive the regular training in Naval tactics and discipline.

"It must be borne in mind," the letter states, "that there are not enough aeroplanes now available for this purpose," therefore it urges the Militia authorities to encourage the public subscription started by the Aero Club of America to develop aviation corps for the Militia. This movement has resulted in securing aeroplanes for different states, as follows:

A Curtiss flying boat and a course of training for both a pilot and a mechanic, for the Naval Militia of New York, offered by the Curtiss Aeroplane Co., of Buffalo, N. Y.

A Curtiss flying boat to the Illinois Naval Reserve by Messrs. MacDonald and Andrews, of Chicago, Ill.

Use of Curtiss flying boat and services of pilot, to the Naval Militia of Pennsylvania, by Mr. David H. McCulloch, Newport, Pa.

Use of Thomas tractor biplane, military type, and services of pilot, for the National Guard of Oklahoma, by Fred R. Roberts, of Okmulgee, Oklahoma.

Use of Curtiss military type biplane and services of pilot for the National Guard of New York, by William S. Luckey, of New York.

Use of Curtiss military type biplane and services of pilot for the National Guard of New York, by Charles F. Niles, of New York.

Use of Schmitt military type biplane and services of pilot to National Guard of New Jersey, by Maximilian Schmitt of Paterson, N. J.

Use of Sloane tractor biplane and services of pilot for the National Guard of Oklahoma, by Overton Bounds, of Kingston, Okla.

Use of Curtiss military type biplane and service of pilot, for the National Guard of Pennsylvania, by H. von Figyelmessy, of Philadelphia, Pa.

Use of Curtiss military type biplane and services of pilot for the National Guard of Pennsylvania, by Harvey W. Kays, of Philadelphia, Pa.

The War Department's organizational plans call for the maintenance of an aero squadron of organized Militia in each of four states, *viz.* New York, Pennsylvania, Illinois and Texas. This number, the authorities urge, should eventually be increased to one for each tactical division, fifteen in all. An aero squadron consists, according to the Tables of Organization, of 21 officers and 93 enlisted men, operating 8 aeroplanes.

Volunteers—men with knowledge of aeroplanes or gas engines and electricians with knowledge of radio as applied to aeroplanes—are urgently needed to make the realization of all these plans possible and to form the corps.



Secretary of the Navy, Josephus E. Daniels, who is encouraging the formation of Aviation Corps for the Naval Militia



Colonel Samuel Reber, in charge of U. S. Army Aeronautics



# ion of Aviation Corps for the Militia



Secretary of War, Lindley M. Garrison, who is in favor of having Aviation Corps in connection with the Organized Militia



Captain Mark L. Bristol, Director of Aeronautics in the Navy

## A Grave Lesson for the United States

There are few better qualified than Claude Grahame-White to point out the effects which the use of aircraft has brought about in the conduct of war. In his latest book\*, with the collaboration of Harry Harper, the prominent English journalist and writer, Mr. Grahame-White can, of course, give us nothing new. The changes in aeroplane design, the numbers engaged, the organization employed—all matters of the deepest interest—are necessarily retained as the most important of war secrets. But it would be well if this work could be placed before every man, woman and child in this whole country of ours. Nowhere else, hitherto, has the imperative need for aircraft in the ranks of national defense been so clearly and so forcibly set forth. And we must remember that the argument through which this theorem is demonstrated is not based on theory as to what might happen. It is founded on the axioms established by experience in the "great war."

Aeroplanes have saved entire armies, through their discoveries as to the intended movements of the enemy, as in the case of the British in their historic retreat through northern France; they expose the foe to terrific onslaughts from shot and shell, as shown innumerable times in their "spotting" for the artillery of both sides; and finally, they afford, by means of their offensive operations with bombs, one of the chief means for breaking the terrible deadlock between whole nations in arms such as now exists along the battleline from the North Sea to the borders of Switzerland.

The weaker the force engaged, the more must it depend for salvation on its eyes in the air. Here is the lesson for the United States, for our army is in far worse condition than was that of England at the outbreak of the war. In the case of attack by a foreign Power our one hope at the outset would lie wholly in the efficacy of our air arm. Let us see how it was with the British in the instance to which reference has already been made.

"It was on the evening of this day (August 23) that Sir John French learned quite unexpectedly by telegram from General Joffre that the Germans—having battered Namur into submission at amazing speed—had thrust their way across the Sambre and were forcing the French troops to retire. The telegram ended with even graver news. Our two British corps were, it said, threatened by three German army corps on their front, and by a fourth which was stealing around them for a flank attack.

"The position could not have been more critical. The French falling back, left our army exposed (on their right); on neither flank had it protection. And the Germans pressing forward irresistibly, were on the eve of a crushing attack. Evening was at hand, it will be remembered, before Sir John had this news; a few hours only of daylight remained. Yet to hesitate was to court destruction. Something must be done and done at once; the menace was one which could be met only by a swift, unwavering plan. That night the commander-in-chief must frame his scheme, and at dawn his army must be in motion. But there was a preliminary and a vital one; this was to ascertain, if there yet remained time in which to do so, the exact positions and approximate strength of the threatening hosts. Cavalry scouts of course were available, but conditions were against them; the area to be traversed was large, darkness almost at hand. Next morning perhaps—but next morning would be too late. Information was needed now.

"Here, made for them by circumstance, was just the opportunity our flying men required. Not only was the scouting needed, but it was needed in haste—in such haste, indeed, that no craft save the aeroplane itself could have brought back the news in time. In a flash there went a message to the aircraft base, and out upon their errands flew the fastest scouts. At twice the speed of an express train, rushing smoothly through the air, went these high-powered craft; and their pilots, peering down on the land below, had a view as from a mountain top, and in an hour, thanks to their tremendous speed, they had gleaned the news that could have been procured only in a day by any other means. They found the hostile forces that were destined for a main attack, marked their positions on their maps, made estimates of their strength; they located also, with accuracy, the flanking movement that was so grave a menace. And this work was done, as it needed to be, at lightning speed. The aircraft had leaped upward and disappeared; then, in a space of time that seemed incredibly short, they were swooping earthward again, their mission done, Sir John given the news he sought, and by an instrument of which he, of the great commanders in war was the first to make striking use, was able to frame his plans that night with swiftness and decision; and next day at dawn, showing a doggedness that can never be forgotten, our little army began its hazardous retreat."

\* Aircraft in the Great War. A. C. McClurg & Co., Chicago.





# Foreign News

Edited by L. d'Orcy



## Austria

Austrian seaplanes raided on June 19, the railway stations at Bari and Brindisi, which are reported to have been damaged.

## Belgium

A detailed account of the destruction by British aeroplanes of the German airship shed at Evere, Belgium, says that in addition to the material damage inflicted which resulted in the blowing up of Zeppelin LZ-38, forty-four German soldiers were killed and one hundred and thirty-seven injured. This raid occurred on June 7, the same day Lieut. Warneford destroyed a Zeppelin near Ghent.

Allied aeroplanes dropped bombs on the German airship sheds at Brussels on June 17, causing slight damage.

## France

The French War Office issued the following statement on June 19:

"A German aeroplane having been observed over our lines at Aspach, near Thann, in Upper Alsace, one of our aviator sergeants took wing and mounted in thirty minutes to a height of 10,500 feet. At this altitude he engaged the German with a machine gun.

"The German replied with his machine gun, and a bullet struck the motor of the French machine. The sergeant again ascended to a position above his adversary and fired three bands of cartridges. During the third round the German aviator suddenly threw his arms into the air. His machine came down like a stone inside our line.

"The French aviator came down under control. He found that bullets had perforated his cylinder, penetrated the steel shield at the back of the motor, and riddled his planes. The Frenchman was slightly wounded in the neck."

The correspondent of the *Daily Mail* at Calais telegraphs that a German aeroplane of the newest type has been brought down by anti-aircraft fire. It is very heavily armored and has sufficient lifting power to carry a gun which is almost as big as a cannon.

## Germany

According to a dispatch from Romanshorn, the exploit of the Canadian aviator, Lieutenant Warneford, in destroying a Zeppelin in Belgium may result in a change in designs in Zeppelins.

Count Zeppelin's assistants had insisted that the newest model should carry less weight so as to be able to rise more rapidly if attacked by aeroplanes. The Count dissented, but he is expected to arrive at Friedrichshafen shortly and the question will be reopened.

The Zeppelin airship that was destroyed in its shed on June 7 at Evere, Belgium, by British airmen, was the LZ-38.

It is reported from Switzerland, that a meeting of aerial experts was held recently at Friedrichshafen to discuss the question of constructing on top of all Zeppelin airships launched in the future a gun platform on which to mount machine guns. These would be used to drive away enemy aeroplanes and protect the Zeppelins from attacks such as that delivered over Belgium by the British aviator Warneford.

The opinion was expressed that Warneford had exploded the theory of Count Zeppelin that his airships could not be approached and attacked by aeroplanes.

The Overseas News Agency issued the following note on June 23:

"A message from Christiania says that the steamer *Iotum*, which has arrived at Stavangera, reports that several Zeppelins on the night between Tuesday and Wednesday (probably June 15-16) dropped many bombs on the Armstrong works at South Shields, England, which destroyed the navy yards and arsenal. Several buildings burned all night. The damage was enormous. Seventeen persons were killed and forty injured."

## Great Britain

Major Harry T. Lumsden of the Royal Flying Corps was killed on June 21 in an aviation accident at the Brooklands aerodrome. He was making a flight as a passenger on a trial test when the engine suddenly stopped and the machine dived earthward and was smashed. Major Lumsden was killed in the fall, but the pilot was only slightly injured.

The British authorities have decided to prohibit henceforth any and all publication of information concerning German air raids. This measure is due to the fact that by publishing the names of the localities visited by German air raiders much useful information was conveyed to the latter, which enabled them to correct their course on each succeeding expedition.

Under Secretary Brace announced on June 24 in the House of Commons that up to that date the number of casualties resulting from hostile air raids was 56 killed and 138 injured. The number of air raids amounted to fourteen.

## Italy

A traveler who has just returned to New York from Italy is responsible for the statement that Signor Marconi has invented a contrivance based upon a magnetizing process, by which an enemy aircraft is drawn to the magnetizing station and brought to the ground.

An aeroplane "destroyer," designed for attacking dirigible airships, has been perfected in Italian government workshops.

It is an enormous machine with three separate engines and with a total energy of over 250 horsepower. The aeroplane combines the tractor and pusher type of machines—that is, those which are drawn along by an air screw in front and those which are pushed by an air screw behind.

It consists, in fact, of the bodies of two ordinary tractor biplanes placed side by side, and far enough apart so there is room between them for the propeller of a third engine. Each of the two main bodies has an 80 h.p. rotary engine and tractor screw in front, so that it looks at first like two ordinary tractor biplanes flying hand in hand.

On the section of wing which joins the two bodies is placed the body work of an ordinary pusher biplane, with a 100 h.p. stationary engine and propeller behind. In this way the body projects well forward in front of the screws of the other two engines, so that it can carry a gun of considerable size and have a clear field of fire forward, backward and on both sides without danger of hitting its own screws or wings.

The tail ends of the two bodies are joined together by a very large tail stretching from one to the other, so that actually all parts of the machine are in proportion.

The big machine is capable of lifting a cargo of bombs large enough to be certain to destroy a Zeppelin if they hit it, and even capable of doing serious damage to a battleship.

TAIL CONSISTS OF THE TAIL-ELEVATOR AND THE RUDDER

THE RUDDER - A VERTICAL PLANE ENTIRELY HINGED

TAIL-ELEVATOR OR HINGED PORTION OF FIXED HORIZONTAL TAIL PLANE

BODY - FRAMEWORK SURFACED WITH FABRIC

20 SEATER

PILOT

PROPELLER

TORPEDO-SHAPED FLOAT FOR STEADYING MACHINE IN THE WATER

WHEELS FOR USE ON GROUND

TORPEDO-SHAPED FLOAT FOR STEADYING MACHINE IN WATER

HYDROPLANE ATTACHMENTS, INCLUDING 6" TUBULAR HYDRO PLANE 24" DIAMETER, 30" LONG, 1" THICK, PLAT BY 1000 POUNDS WITH WEDGELINE FORWARD, EXTREMELY LOW, LIFTING THE MACHINE TO RISE INTO THE POSITION IN WHICH IT SKIMS ALONG THE WATER

Courtesy of Flying

Sketch of one of the Coastal Seaplanes used by the British Navy





# MODEL NEWS

Edited by WALTER H. PHIPPS



## Big Prizes Offered for National Model Aeroplane Competition

A big national model aeroplane competition open to all model clubs throughout the country, to extend over three months, beginning in August and ending in October has been arranged by the Aero Club of America.

### \$265.00 and the Villard Trophy in Prizes

It will be the biggest event in the history of model flying and should do much towards promoting even greater interest than now exists in this most fascinating and important branch of aeroplane development. By holding such a contest it is expected to induce many model flyers to organize new clubs and to bring greatly increased membership to the clubs already in existence. We therefore urge everyone interested in model aeronautics to join a model club, or if there are none in their vicinity to band together their friend and organize clubs of their own. Complete information on the organization of model clubs can be had by addressing any of the leading clubs or the Model Editor of *Aerial Age* who will gladly send type-written instructions on how to go about this.

Any clubs which have not received notification concerning the contests are urged to make application for entry to Alan R. Hawley, Chairman Contest Committee, Aero Club of America, 297 Madison Ave., New York City.

Letters advising the leading model clubs particulars regarding the contest have been sent out and have created much enthusiasm. Already the Aero Science Club has replied stating their members would enter the contest and that they had already chosen a date for their first elimination contest which is to be held at the Garden City aerodrome the first week in August.

Both the Illinois and Milwaukee model clubs have co-operated with the Aero Club in the organization of the contest and have signified their intention of having their crack flyers in the events.

Clubs which have not already sent in their application for entry should do so immediately.

### General Rules and Regulations Governing the National Model Aeroplane Competition

The National Model Aeroplane Competition is to consist of three monthly model aeroplane contests, to be held in every part of the country simultaneously. These contests, which are to be open to all model clubs in America are to be timed and judged by officials of the large Aero Clubs, and wherever there are no aero clubs, by representatives of the Aero Club of America.

The contests are to be held on any day of the third and fourth weeks of each month, beginning with August next, at places selected by the model clubs. They are to be open to all Model Aero Clubs throughout the country, who are to hold elimination contests, at their own convenience, to pick out four representatives to represent their club at the official contests. The four representatives need not necessarily be the same in each contest.

### Schedule of Contests

The nature of the contest is to be different each month, as follows:—

1st Month—Distance, launching from hand. (Any type models)

2nd Month—Duration, starting from the water, open to model flying boats and hydroaeroplanes, the flying boats to be allowed 20% in addition to the duration achieved.

3rd Month—Duration, starting from ground. (Any type models)

Cash prizes of \$50, \$25 and \$10, offered by the Aero Club of America, will be awarded to the individual members of the various clubs making the best records each month. The Villard Trophy, donated by Henry S. Villard, will be awarded to the club whose members collectively make the largest score during the three months—this to be judged by the point system.

A club becomes the owner of the trophy when it has been won for three consecutive years by its members—the rules governing the winning of the trophy will be progressive in accordance with the progress made in model flying.

### Tentative Rules Governing the Competitions

Article 1. The contests are to be held any day during the third and fourth weeks of each month.

Article 2. Each club is to select its own place for holding the contests and make all arrangements with the local committee of the Aero Club appointed to judge its events.

Article 3. Each club is to hold its own elimination trials during the first two weeks of each month and when ready to make the official trials notify and make all arrangements with the committee of the Aero Club appointed to judge its events.

Article 4. Only four representatives will be allowed to compete in each contest, but these need not be the same each month.

Article 5. Each club is to co-operate with its local judging committee and arrange things so that the judges will be relieved of all the routine and will only have to officially judge and pass on the events.

Article 6. Each contestant will be allowed three trials in each event and no more.

Article 7. Models may be repaired but not changed during each contest.

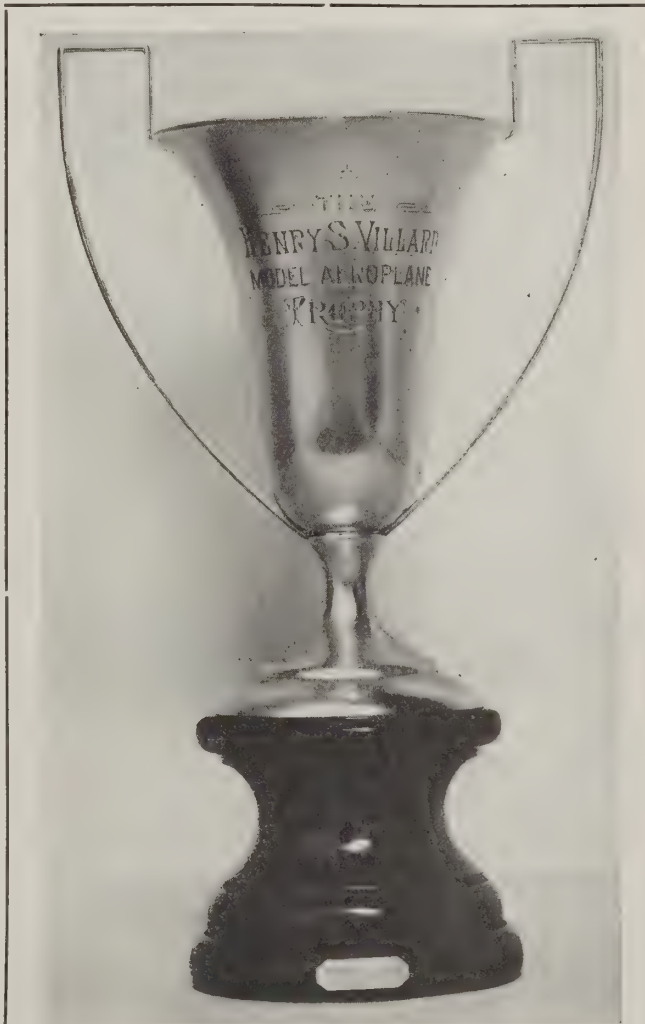
### Conditions Governing the Measuring and Judging of the Contests

Article 8. All distance contests are to be measured with a steel tape, each club supplying its own steel tape (officially passed on by the judges) and arranging its events so as to facilitate quick and accurate measuring of the distances. It is the official duty of the judges appointed to see that this is done carefully and accurately. In the case of the winner in each club the place of landing of his model is to be marked by a peg so that the distance can be measured off again from the starting point and verified a second time by the judges.

Article 9. All duration events are to be timed with accurate stop watches, in the manner usual for such events.

### Conditions Governing the Winning of the Villard Club Trophy

Article 10. The Villard Club Trophy will be awarded to the club whose members collectively make the best showing, this to be determined by the point system after all the individual scores have been received by the Contest Committee of the Aero Club of America.



The magnificent silver trophy presented by Mr. Henry S. Villard



## Aero Science Club Bulletin

By G. A. Cavanagh

At the last meeting an announcement was read regarding the Aero Club of America's decision to offer prizes for three monthly Model Aeroplane Contests to be held in every part of the country simultaneously. These contests to be governed by representatives of the Aero Club of America, or its affiliated clubs. In connection with this large competition the Villard Trophy will be competed for by the Model Aero Clubs.

In view of this offer on the part of the Aero Club, the Aero Science Club decided to hold elimination contests during the first week of August. The four best flyers will be picked to represent the Club. Many members are already prepared to take part in the elimination contest and a lively time is expected. The elimination contest will be held at Garden City, Long Island.

At the coming meeting a report is expected from Mr. Flynn regarding the shop where the new machine will be built. Many members are anxious to get started and it is believed that arrangement will be completed at the coming meeting.

Mr. Durant reports that communications have been received from the manager of the Sheepshead Bay Motordrome regarding the possibility of allowing the Club the privilege to fly there during the coming summer. It is hoped that satisfactory arrangements will be arrived at in view of the fact that this field is one of the best in the near vicinity of New York City and is easily accessible. The Club has entered upon a campaign for new members and it is believed that before long many new members will be enrolled. Already a number of new members have been enrolled and the outlook is very promising.

For further particulars address the Secretary, Mr. G. A. Cavanagh, 29 West 39th St., New York City.

## Illinois Model Aero Club

The exhibition given the Crane Technical School by the I. M. A. C. proved a great success. All three events, bomb-dropping, loop-the-looping and racing, were received with even more enthusiasm than Mr. Borkland, chairman of the exhibition had expected. Over two-hundred applications for membership were requested and passed out. It is hoped that a good percentage of these will become expert model makers of the I. M. A. C.

Mr. Nealy, who has charge of special meetings and activities, called a speakers meeting of the club, Friday evening. Mr. Charles Dickinson favored us with a talk on "Aviation in War" and Miss Katherine Stinson followed with a recital of her experiences with the Texas model boys. Mr. Harry Wells also gave an inspiring talk on "The Light-type Aeroplane."

The Secretary of the club wishes it announced that on our next meeting elections of officers for the next six months will be held.

The best wishes of the I. M. A. C. are extended to Mr. Geo. Weaver in his position with the Thomas Bros. Company at Ithaca, New York.

## How to Make Bentwood Propellers

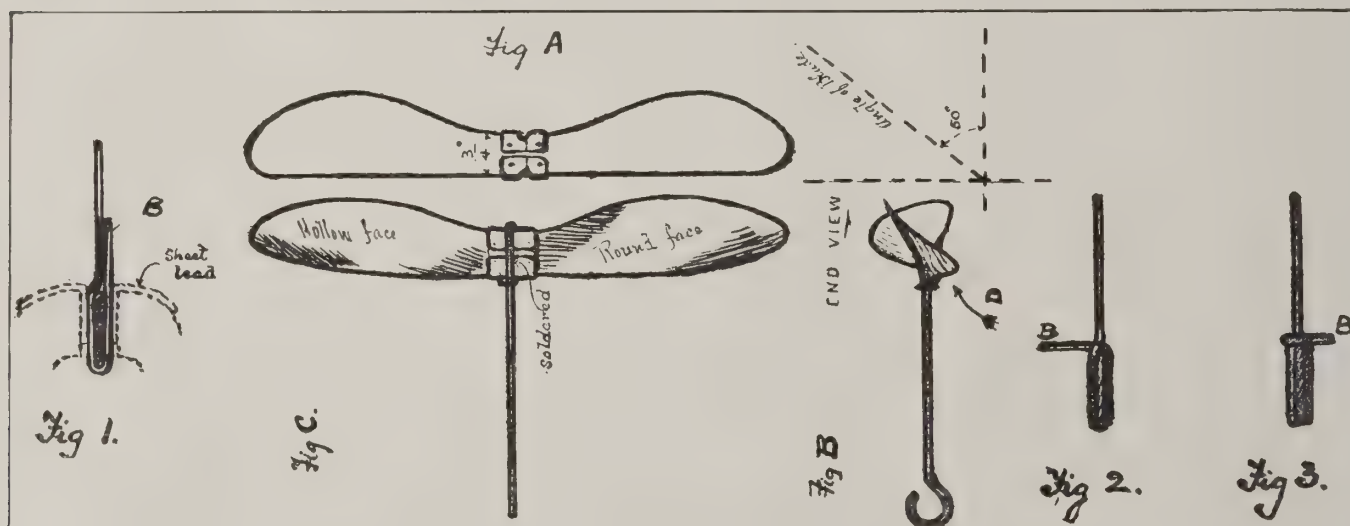
By Wm. P. Dean

Very effective propellers can be made from thin Maple or Birch, steam or heat twisted. Models driven by them have gained World's records. They are lighter, stronger and more powerful than those carved from the solid. The following directions (from long experience and practice) will enable anyone to turn out his own propellers with satisfactory results.

Confine yourself at first to sizes from 6 to 10 inches, (8-inch is the most popular). Always make two at a time right and left hand or "twins," by so doing you can check the pitch angle of the blades accurately. Note narrow blades with great twist only require a few strands of rubber to drive them, whilst broad blades with coarse pitch might require double the weight of rubber to obtain the requisite 600 to 1,000 revolutions per minute.

Figure A shows a very satisfactory shape of blade before twisting. Figure B shows end view after twisting, which should be carefully studied during the process. The twin propeller is twisted in the other direction to that shown. Fig. C finished side view.

The angle of the blade tips should be about 50° with the horizontal as shown. Select two straight grained pieces of birch, 8 inches long, 1½ inches wide and barely 1-16 of an inch thick when planed. Cut out both to the shape shown at Fig. A. Blanks already shaped can be purchased if desired. Obtain two pieces of thin tin 1½ ins. long and ⅛ of an inch wide. Fold these over at the center as shown and punch dents. Now cut off two pieces of 1-16-inch diameter mild steel wire or cold drawn brass wire, 6 inches long for the shafts. First bend as at Fig. 1. Then spring in the propeller blank. Hold in position, preferably between the jaws of a small iron vise, lead clamped, as shown by dotted lines at Fig. 1. Now with pliers pull down end B to right angles. Fig. 2 and 3. Then pull it once around the shaft, or twice if preferred, cut off end B close to shaft and file off level. Close up with pliers, and run a little solder on each side which fixes the shafts firm. Cut off the shafts about 2½ inches from the spiral, this will allow sufficient length to form the rubber hook end at a later stage before or after being placed in the propeller bearing fixed on machine. To steam twist the blades, dip them into hot water and hold over a candle flame or the steam from a kettle spout. Let the heat of the candle affect the hollow side or the steam the rounded side of each blade, holding the blade in the center with one hand and twisting with the other gradually from near the center to the tip of blade. The greatest twisting effort is required near the center. After obtaining about one-half of the desired twist, turn around and work upon the other half of blade again studying your end sketch and twisting as before. Now lay this upon one side and go to work upon the other propeller which must be twisted in the opposite direction, see end view. See that the entering edges of blades are on the shaft. Having twisted both blades about half the necessary amount, lay them together, end to end, and satisfy yourself that they are correct so far, then leave them for a day or two. A second steaming process will complete them, regulate by further steaming, any difference detected later in the pitch. When thoroughly dry, give three coats of model varnish.



Mr. William P. Dean's method of making bentwood propeller explained in the article above

## GARDEN CITY NOTES

In spite of the changeable weather during the past week there was plenty of flying to be seen at the aerodrome.

Stevenson MacGordon was out practically every day flying first the Heinrich then the Mayo. On Friday he made another splendid trip in the 110 Gyro engine Heinrich again rising over 6,000 feet with two passengers.

Saturday afternoon did not look very encouraging for flying, a terrific storm hitting the field about the middle of the afternoon, but fortunately soon passing over. Immediately the storm had passed MacGordon brought out the 90 h.p. Gyro engined Mayo tractor and taking Raymond V. Morris, the well-known Curtiss pilot, as passenger, made a beautiful flight, which well impressed his passenger with the splendid flying qualities of the machine.

He next took up Mr. L. D. Gardner, who had never been up in an aeroplane before and treated him to all manner of thrills including an exciting race with P. C. Millman in the Schmitt monocoque. The race between Millman and MacGordon seemed rather too exciting to those on the ground, the machines sometimes being not more than 50 feet apart, Millman's machine sliding alarmingly on the turns. Later in the afternoon Blair Thaw and P. C. Requa were out grass-cutting on the Belanca school machine while Arthur Heinrich made a couple of straight-aways in the Heinrich school monoplane.

## Military Aviation News

June 8, 1915, was Admiral Howard's Day at the Panama-Pacific Exposition in honor of Admiral Howard, commanding the Pacific fleet. The ceremonies included a parade in which Cavalry, Coast Artillery and Navy contingents participated. During the parade three army aeroplanes flew over the city and the exposition.

During the past week, Lieuts. MacDill and Christie undertook their J. M. A. tests. Lieut. Christie completed his tests without incident. Lieut. MacDill on his 90-mile straightaway, encountered such strong head winds that it took him 3 hours to cover 88 miles. Within two miles of his destination, he was required to make a forced landing with a dead motor and to land in a ploughed field. The machine was unable to get a footing in the soft earth and went over on its nose, dishing a wheel and damaging the planes.

Saturday, June 12th, Lieut. FitzGerald, piloting Aeroplane No. 38, with Lieut. Gorrell as passenger, made a flight to Long Beach. Lieut. Christie piloted the machine on the return flight for an official J. M. A. test.

The House Appropriation Committee visited the aerodrome last week. Each member made a flight in the Flying Boat, No. 34, with Mr. Francis Wildman, the flying boat instructor piloting.





Aeronitis is a pleasant, a decidedly infectious ailment, which makes its victims "flighty," mentally and physically. At times it has a pathologic, at times merely a psychologic foundation. It already has affected thousands; it will get the rest of the world in time. Its symptoms vary in each case and each victim has a different story to tell. When you finish this column **you** may be infected, and may have a story all of your own. If so, your contribution will be welcomed by your fellow **aeronuts**. Initials of contributor will be printed when requested.

### The Old and the New Generation

In the *Outlook* a writer quotes Charlotte Perkins Gilman as picturing a butterfly as most dissatisfied with its metamorphosis:

" 'I do not want to fly,' said he,  
 'I only want to squirm.  
 I hate to be a butterfly, , ,  
 I want to be a worm. "

After vainly arguing with that unhappy insect on the advantages of aeronautics, she says:

"I left my fool in red and black;  
 The last I saw was this,—  
 The creature madly climbing back  
 Into his chrysalis."

That reminds us of the metamorphosis of some folks of the members of the old generation.

Rules and legislation may be necessary in sport, but they'll never make up for lack of sportsmanship.

It doesn't take an X-ray to find the streak of yellow in a quitter.

A check on the bank of cheers can never be cashed unless there's a deposit there of hard work and practice.—Walter Camp in *Collier's*.

### Aviation Reports

Twelve years have now elapsed since the invention of the aeroplane by the Wright Brothers and it is practically seven years that the flying machine has appeared before the public.

You, I and some other people may think this time has proven sufficient to educate the average reporter about the intricate organism of the aeroplane. But alas, the facts deny this assumption. Listen to the following while you are sober:

"At a height of 100 feet persons saw the machine *quiver*. The airman worked frantically with his control but the machine dropped to earth."

And here comes a real beauty. Referring to the same accident, another reporter says:

"The aviators were circling close to the edge of the aviation field to make a landing when the engine *suddenly stopped and back fired*. Immediately the left wing of the machine crumpled and the biplane plunged sidewise toward the ground."

(Must have been some engine that can stop, then back fire, whereupon a wing crumples up. We suggest an official investigation).

Describing the accident that caused the death of Lieut. Warneford, the—Zeppelin-sinker—a report says:

"The force of the explosion caused the British Morane monoplane to turn completely over. For nearly a minute the aviator struggled desperately while his machine slid rapidly toward the earth. By an almost superhuman effort he *regained control of his levers and righted the biplane* less than 200 feet from the ground.

"The rapidity of his descent carried the airship to earth. The landing place was behind the German lines. The mechanic sprang out, 'cranked' the propellers, and the machine was off before the astonished Germans in a neighboring field could get the range with their guns."

Here you see a *monoplane* which requires for its recovery a struggle of nearly one minute by the airman to *get hold of his levers* (I thought the Morane was fitted with a *cloche* and a foot-bar) whereupon he is enabled to right *the biplanes*. Nevertheless the rapidity of his descent carries the monoplane, which is an *airship* to earth. There the mechanic cranks the *propellers* and the rig is off before the astonished Germans in a *neighboring field* could get the range with their guns.

It's all wrong, Erasmus, it's all wrong!

"Three years ago," says President F. A. Seiberling of The Goodyear Tire & Rubber Co., "bankers were wondering where the people of the United States would get the money to pay for the 150,000 automobiles then manufactured. There are now 1,500,000 machines in use and next year the number will pass the 2,000,000 mark. This great expansion of the automobile business will require millions of additional tires." The Bankers will have something to wonder about in the Aero field pretty soon.



THE CAR OVERHEAD NUISANCE

From Life.



### Pennsylvania News (Continued from page 370)

It was also decided to further stimulate State-wide interest by the appointment of Club representatives in each County.

Pending the organization of a Pennsylvania National Guard and Naval Militia Aviation Corps, the generous offer of David H. McCulloch of a Curtiss flying boat and his services as pilot, was accepted by the Club on behalf of the State.

Increased interest in the Club by additional enrollments was noted, and on motion duly seconded, Captain John J. Knapp, U. S. N., Commander C. B. Price, U. S. N., and Lieut.-Commander W. H. Hunt, U. S. N., were unanimously elected members. Plans for a Ladies' Auxiliary were also considered and proper action assured.

After general discussion of the current plans to raise a National Defense Fund to develop the Pennsylvania Aeroplane Station at League Island; increased membership; and the extension of the Club's influence throughout the State, in which every member present pledged his hearty co-operation, the meeting adjourned subject to the call of the President.

### Benoist Notes

The Benoist plant at Chicago is being rushed to its fullest capacity, much night work being required to keep pace with the orders.

A new Benoist Flying Boat equipped with a 100 h.p. motor will be on Lake Michigan within a few days. It will be used for passenger-carrying and training, the headquarters of the machine being at Lincoln Park.

Jay Smith, the crack Benoist hydro pilot, has returned from a two-day trip to Peoria where he has been flying the Benoist boat recently delivered to the Peoria Aero Club. Smith made over twenty-five flights and carried a large number of passengers, at one time making a long trip above Peoria Lake with three passengers in the machine.

### "Military Aeroplanes" (Continued from page 371)

In a most logical manner, the next step taken, is the explanation of the aeroplane itself, as a unit, consisting of a combination of various wings, with its motive power. This chapter, by itself, is of very great importance to aviators, and is well developed. The charts of lift and resistance characteristics are developed to give the chart of power required to fly. First are found the speeds required in order to lift the weight at the various angles of incidence. The second characteristic is the total resistance, and the third determination is that of power required. The power available, is then charted and the predicted performances of the machine in speed range, climb, glide and fuel consumption, are readily obtained.

The characteristics of the aeroplane's performances having thus been determined, attention is directed to the stresses and safety factors in the aeroplane structure. This important subject is given full consideration, with sample stress diagrams, fully explained, and attention given particularly to "follow thru," to aid the aviator in detecting the weak spots in his machine.

This is followed in Chapt. X, by perhaps the most important chapter in the book, replete with real data of the most valuable kind, on the construction, assembly, and maintenance of aeroplanes. Attention is given to the reliability of features of construction; data is given on the proportioning of parts, on strengths to be expected, on weights, and on the alignment of the machines and their tuning up. Steel, wood, wing covering, and other materials of construction are studied and data given and cables and wires receive their full share of attention in the consideration of their strength, proper fastening, flaws, dangers, etc. For the aviator who is interested enough in his machine to desire assurance as to its strength, this chapter is of unusual value.

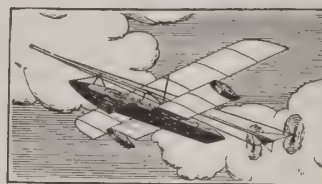
In order to assist in the proper application of pontoons or hulls to aeroplanes, and as a study of water flying, attention is next given to the marine aeroplane with data and discussions on hydroplaning, balance, seaworthiness, etc.

This is followed by a rather complete study of Flying and Airworthiness, which is easy to follow, devoid of any formulae, and unusually clearly stated. The entire subject matter is taken up in a decidedly new form and is interestingly written. For a flyer, the consideration of the aeroplane in operation as given in this section, should be of particularly practical value, and although this subject is obviously a most difficult one to write about, Mr. Loening has succeeded, in presenting it, in a most concise and practical manner.

In the closing chapters, attention is given to the "Eyes of the Army and Navy," in the necessity for structural perfection and for a wider field of view for observation. Instruments that should be used in flying are considered and the value of knowing the performances and operation of aeroplanes, more thoroughly, is emphasized. General requirements for military aeroplanes, and features in which we may seek for superiority, are then given consideration.

Examples are everywhere given, throughout the book, with numerical solutions, that are most enlightening.

### The Official Records are Held By



### PHIPPS MODELS AND SUPPLIES

Whether you are contemplating building an exact scale model of

a large machine or a simple racer we can supply you with what you require.

#### SCALE BLUEPRINTS with complete Building Instructions

3 Ft. "Obst" World's Record Flying Boat (Guaranteed self-riser) -	50 cts
2 Ft. Bleriot Racer (flies 600 feet) -	25 cts
2 Ft. "Avis" Tractor Hydro (rises from the water) -	35 cts
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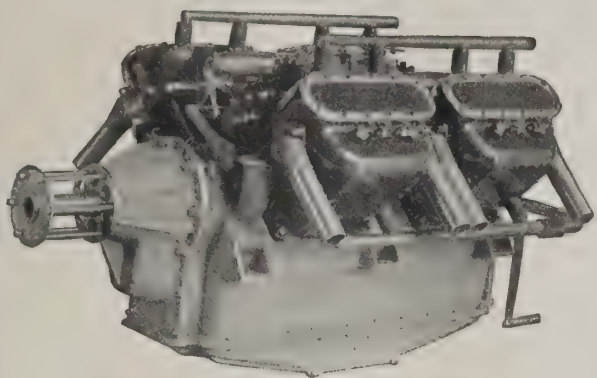
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### The 1915 Benoist Flying Boats (Continued from page 374) Specifications

The general specifications of the Model "A" are: Span, 36 feet, chord 5 feet, gap 6 feet, length 28 feet, area 360 sq. feet, weight with 75 h.p. motor 1180 lbs., useful load 650 lbs.

The Model "B" has the following specifications: Spread, 51 ft. 6 in.; chord, 5 ft., and a gap of 6 ft. The hull is 42 in. wide and 24 ft. fore and aft. This model requires 100 h.p. The motor may be placed either in the hull or up between the planes, according to the wishes of the purchaser, the same as in Model "A." Area, 497 sq. ft. Weight, with 100 h.p. motor, 1390 lbs. Useful load, 800 lbs. Stabilizers and elevators, same as in Model "A," 16, 10 and 18 sq. ft. respectively. Other specifications are practically the same as in Model "A."





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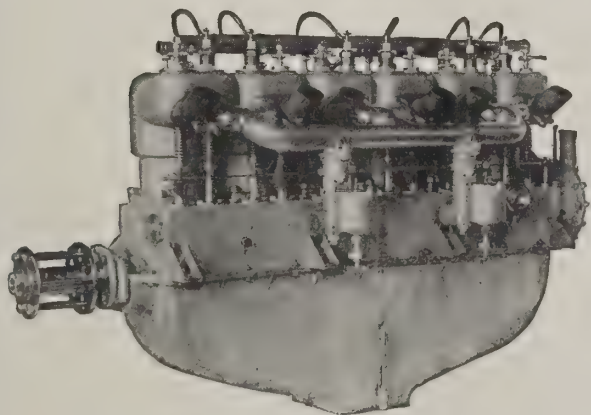
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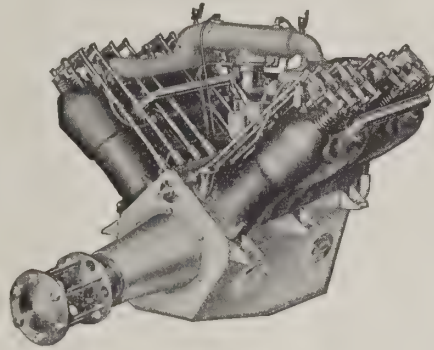
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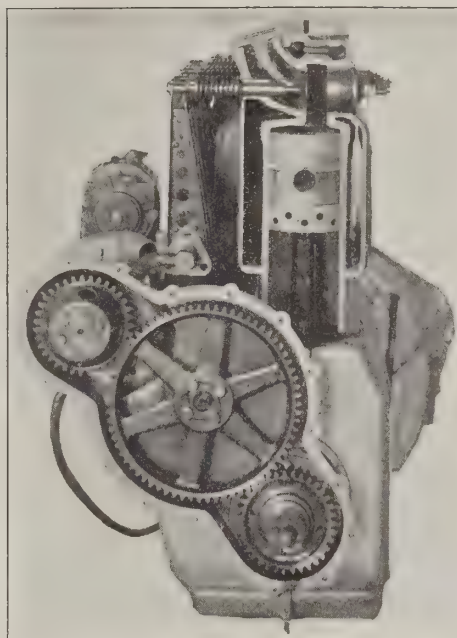
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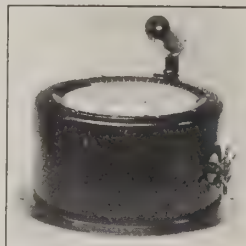
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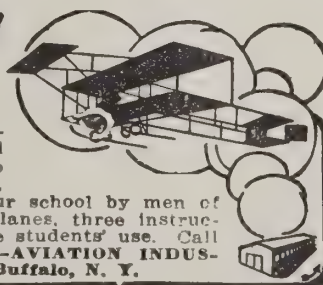
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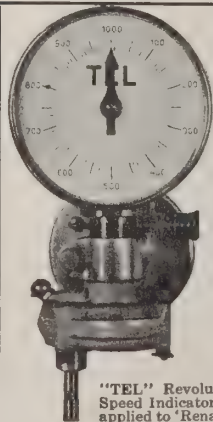
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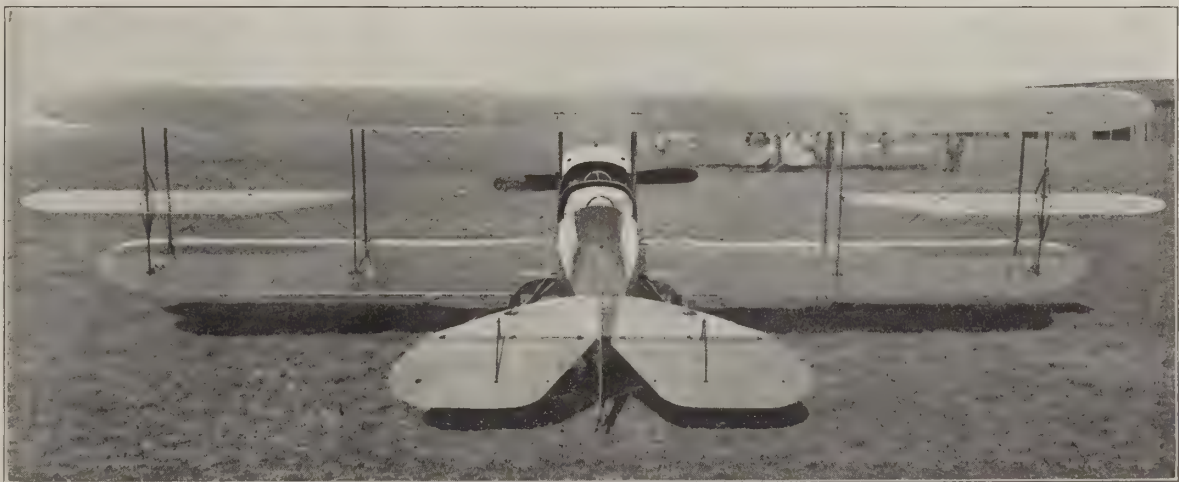
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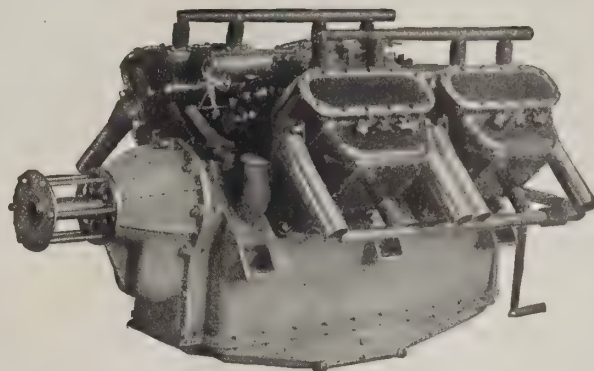
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PUBLISHED WEEKLY BY THE AERIAL AGE COMPANY, Inc., 116 West 32nd Street, New York City

Entered as Second-Class Matter March 25, 1915, at the Post Office at New York, N. Y., under the Act of March 3, 1879

VOL. I.

NEW YORK, July 12, 1915

No. 17

## Aviators Wanted

"We want an aviator—and are willing to pay any price for one," was a common expression in aeronautical circles last week. Representatives of towns of different states came to New York from far to get aviators to entertain their communities with exhibition flights, expecting, in many cases, to find aviators waiting to be engaged, but they soon found out differently. They visited the Aero Club of America and the offices of *Flying* and *Aerial Age*, then, and sought the co-operation of the officials of these organizations to secure aviators, but, with three exceptions they had to go away disappointed. In two cases the representatives were willing to pay \$1,000 each for any kind of aeroplane; in some other cases they would have been satisfied to have the aeroplane for their people to see. But they had to be disappointed. No aviators nor machines were available.

The records of the Aero Club of America show that although there were 35 aviators who signified their intention to enter the National Aeroplane Competition and most expressed their intention to fly across the Continent, only one replied that he was in a position to enter for the trans-continental flight when entries were requested for the \$25,000 prize.

The tremendous rush, large orders from European countries already placed, and larger orders expected, are occupying constructors and aviators; and the enormous interest created by the daily reports of demonstrations of the potentiality of aeroplanes in the war have created a large demand for aviators to give exhibitions at substantial figures. Aviators—men with engineering experience—are wanted. Aeronautics in America affords wonderful possibilities for the right kind of young men.

## The Absurdity of the Massachusetts Air Navigation Law

The Massachusetts Legislature of 1913 enacted a law requiring any person flying in Massachusetts to secure a license from the Highway Commission, after having qualified as a flyer before an expert of that commission. But the lawmakers neglected to provide an appropriation for the Highway Commission to carry out the law.

In other words, an aviator must not fly in that State unless he procures a license from the Highway Commission, and the commission is unable to grant the license because it has no money to pay an expert to make the necessary test. If the aviator flies without a license he is liable to arrest.

The law stood its first test on June 24th when Harry M. Jones, the aviator who operated the biplane

that was wrecked at Squantum last Friday, resulting in the death of George H. Hersey, Jr., and William D. Ely, Jr., was found guilty in the Quincy District Court of the charge of operating an aircraft without a license. Despite the aviator's plea of not guilty, Judge Albert E. Avery found cause to make an opposite finding. A fine of \$100 was imposed and then was suspended for three months, the Court saying that the money would be remitted if there was no further violation.

As an absurdity this beats any printed in "Aeronitis" since that department was instituted.

## Two Submarines Sunk by Aeroplanes

The second submarine to be sunk by an aeroplane supports the editorial prophesies of *Aerial Age* in this respect. But we disclaim credit for undue prescience. It was evident that as soon as the number of aeroplanes increased and some could be used for purposes other than scouting, directing artillery fire, and fighting other aircraft there would be some employed against submarines.

The first submarine destroyed by aircraft was a Russian submarine and was destroyed on May 31st by German aviators who dropped bombs on it near Gotland Island.

The second is an Austrian submarine, and was destroyed by a French aeroplane. The details are given in a cable as follows:

ROME, July 2.—The Austrian submarine U-11 was bombarded and sunk in the Adriatic by a French aeroplane.

The Minister of Marine states the action took place on Thursday. The U-11 was lying lazily on the surface and apparently failed to notice the aviator as he circled overhead. With a sudden swoop the aeroplane shot downward to within forty-five feet of the submarine's deck. By this time it was too late for the undersea craft to submerge. Two bombs were dropped, both of which struck the submarine near the turret and exploded.

The submarine sank almost instantly and did not reappear, although wreckage was afterward found about the scene. The U-11 was one of the newest of the Austrian submersibles and displaced about 860 tons. She is supposed to have had aboard a crew of twenty-five men.

## "Motor Sense"

C. W. Robinson, the aviator and designer and builder of the Robinson motor, with which he made the record of 322 miles across country, suggests a term which most people in aeronautics will readily approve and adopt. The term is *motor sense*.

Lack of motor sense is at the root of many failures in aviation, and many good motors are prevented from giving satisfactory results by lack of that sense on the part of the users. True, many motors have mulish characteristics and must be humored, but the majority will run if the users have "motor sense."



**British Aeroplanes Saved the Army of Sir John French from Sure Annihilation**

From "The Aeroplane in Warfare," by Charles L. Freeston, in the July *Scribner*

British military aviation had undoubtedly attained a greater degree of organization before the war broke out than at one time appeared possible, or indeed than was realized by the British public. Like every other department, of course, its personnel and equipment were not based upon a scale in any sense commensurate with the magnitude of the gigantic war with which the nation was suddenly confronted, but nevertheless were ready and complete enough to astound, by their effective work every man who was not already aware of their inspiring capabilities. At the very outset of the campaign they saved the British Expeditionary Force from extinction, for if his aviators had not warned him in time, General Sir John French would not have known of the oncoming of immense German hordes charged with the Kaiser's express command to wipe out the "contemptible little army." As everyone knows, the memorable retreat from Mons was strenuous enough as it was, and ranks as one of the greatest of military achievements; but in his historic despatch Sir John French could not conceal his satisfaction with the services which his gallant flying-men had rendered, while General Joffre awarded the British Flying Corps the decoration of the Legion of Honor forthwith.

As the British aviators began, so they continued, and the history of their achievements is one long record of deeds of gallantry and daring. Fired by these exploits large numbers of young men passed through the schools and were enrolled as pilots, while the manufacture of aeroplanes was pushed forward in every available factory. The efficiency of the flying contingents at the front has not only been increased accordingly from month to month, but the outstanding feature of the aerial warfare has unquestionably been centred in its scientific no less than its military value. Whether voluntarily or under orders, flights have been made, and with conspicuous success of a kind which had never been attempted.

**Our Shortage in Aircraft**

Editorial in The New York *Tribune*

THE military value of the Zeppelin seems still matter for much doubt. The dreadnought has not entirely proved its worth. Even the submarine, with all its background of accomplishment, has not emerged from the experimental stage. But if there is anyone who continues to question whether aeroplanes are as necessary to modern warfare as guns, he may be put down as one who stopped reading the newspapers on August 1, 1914.

And yet, in the country-wide condemnation directed against the unpreparedness of our navy, and to a greater degree of our army, there has been surprisingly little reference to our utter deficiency in aircraft. We take the more pleasure, therefore, in printing in another column of this issue a letter emphatically calling attention to this ridiculous and almost criminal condition. In neither navy nor army are there machines enough or pilots enough to accomplish at the outset 1 per cent. of the reconnaissance necessary to a campaign in actual warfare, to say nothing of a reserve supply to replenish the machines and pilots lost in fighting. Pitted against a first-class enemy, even though his forces numbered no more than ours, American troops and American warships would be in the position of a householder under a bright light duelling with a hidden burglar, or in that of our volunteers in the Cuban campaign, the smoke of whose powder revealed their positions to an enemy using smokeless powder and therefore unseen.

Happily, though Congress has begrudged a scant million and a third to the combined services, to remedy a deficiency challenging many times this amount, the Aero Club of America has succeeded in interesting private owners of aeroplanes in the situation. Already it has procured the loan of ten machines and the subscription of \$8,000 to train volunteer pilots and to supplement what aid the Army and Navy departments can extend in the matter of aviation training to the national guard and naval militia.

It is a good beginning, for which the Aero Club deserves well of the country. The latter, to show its appreciation, can do no

better than to swell the subscriptions and the number of machines loaned pending the next session of Congress (an extra session called shortly, let us hope), when Congressmen should be overwhelmed with the popular demand for generous provision in the matter of military aviation as in that of every other modern arm of defence.

**Our Aircraft Needs**

Country Woefully Lacking in This Important Means of Defence

To the Editor of The *Tribune*.

Sir: In view of what aircraft have accomplished in the present war, it is foolhardy to maintain that this instrument of warfare is of small account as an adjunct of any army. Anyone who has followed the war at all knows of what inestimable value the aeroplane has been to the opposing armies, but it seems that few people actually realize how priceless it has been. Without the aeroplane the moves in the great war game must necessarily have been extremely slow, and it is doubtful if the point in hostilities now reached could have been attained in so short a time without it. For the aeroplane renders every move of an army entirely open to the other general, and he can so counter move his troops that a surprise attack is rendered impossible.

Aviation in America has reached a critical point. With nearly every other civilized country far ahead of the United States in this art, we are practically without any air defence at all. Congress has steadfastly refused to encourage the development of the air service in both the army and the navy, and the appropriations for this branch have been so pitifully small each year that barely enough money has been forthcoming with which to keep the available machines in repair. It seems strange, moreover, that we, who have the greatest coast line to protect, have fewer aeroplanes than the tiny country of Serbia! An apathetic American public—to this arm of our war strength—has allowed Congress to appropriate as little as it pleases and so bring our air force to the alarming condition in which it now stands. It does not seem credible that the general public can allow this state to continue. We are far behind such countries as China, Japan, Switzerland, Morocco and Australia. We have only one aeroplane fit to fly in our Navy, and but three ordered, and our army is but little better off.

Compare this with the hundreds of machines in the armies and navies of France, England and Germany—first class powers with which we cannot by any means be rated. These nations have given millions to the development of their aeronautical reserve, and they still clamor for more and more aeroplanes. This fact is shown by their factories working day and night to turn out machines, and they cannot work anywhere near fast enough to satisfy the government. We, too, need millions for this purpose instead of the \$1,300,000 given this year by Congress for the aeronautical needs of both our army and navy, and instead of spending millions for battleships.

AN AERO ENTHUSIAST.

New York, June 23, 1915.

**The Need of Aeroplanes**

Camden, (N. J.) *Post Telegram*

The extensive use and great practical value of the aeroplane in war, both on land and sea, is one of the most conspicuous features of the European conflict. It suggests that this country's lack of aircraft is one of the greatest defects in our system of national defence. France and Germany would not have been equipped for aerial operations had it not been for private liberality. Popular subscriptions in both countries added largely in the two years prior to the war to the number of aeroplanes and dirigibles available for use.

It has been suggested that those possessed of large means in this country, whose possessions would suffer in the event of an attack upon our shores, may be persuaded that contributions to a fund to provide aeroplanes and to train flyers will be in the nature of insurance, at any rate it would be a valuable contribution to the national defence. At very little cost in comparison with the vast treasure they would guard, an aerial squadron could be equipped, to be stationed at New York, the principal gateway of the nation, affording means of spying out the movement of any hostile force long before it steamed within reach of the fortifications. It would also serve as a defence against bomb dropping, which is to be expected from a foreign foe, since no city seems to be protected, the international safeguards existing before the present war having all been shattered.

America needs thousands of aeroplanes, whereas at the present time it has only a few score available for use.



# THE NEWS OF THE WEEK

## Porte and "America" Safe

A cablegram has been received by the Trans-Atlantic Flight Committee of the Aero Club of America from Lieut. John C. Porte, the pilot of the large flying boat *America*, advising that the report to the effect that the *America* had been sunk and that he had lost his life thereby, is unfounded.

The cablegram was in reply to a message sent to Commander Porte by Mr. William D. Gash, representative of Rodman Wanamaker and a member of the Trans-Atlantic Flight Committee, who had cabled to England for verification of the report of the alleged disaster. The cablegram from Commander Porte read, in part, as follows:

"Report entirely unfounded. *America* flying better than ever. Best regards.

(Signed) PORTE."

The cable brought relief in aeronautical circles here, as much anxiety had been created by the report of the death of Commander Porte and of the loss of the *America*. It has been known in American aeronautical circles that the huge flying boats of the *America* type have given excellent service, as twelve flying boats of that type were ordered by the British Government immediately after the *America* had been put in commission by them, and this order was followed a few days ago by an order of twenty more.

These flying boats have wings 74 feet wide, and are equipped with two motors of 100 h.p. each. The *America* itself lifted more than 1,800 pounds last summer, and was practically capable of carrying the load of fuel necessary for crossing the Atlantic when, because of the war, the project had to be abandoned.

A type of aeroplane much larger than the *America* is being constructed for the British Government by the Curtiss Aeroplane Co., at Toronto, Canada. The wings of this machine are 102 feet wide, and each machine will be equipped with two motors of 160 h.p. each. The large flying boat is dispensed with in this type, which is a land biplane, and although much more weight is added to the machine by the enormous motors, the substitution of a lighter landing gear will enable the machine to carry a load of more than a ton at the rate of 75 miles per hour.

## Fifty Aeroplanes Shipped to England

During the week ending July 2nd, fifty aeroplanes were shipped for England from New York alone. Other large shipments went to Russia by the Russian line.

## Clarke Thomson Orders Curtiss Flying Boat

Mr. Clarke Thomson, the Philadelphia sportsman, member of the Aero Club of America, has ordered a Curtiss Flying Boat, model F, equipped with an OXX motor.

Mr. Thomson is the fourth member of the Aero Club of America to acquire a flying boat in the past two months, the others being Vincent Astor, Harry Payne Whitney, and Robert Glendinning.

## Lieut. Jones Loops the Loop

At San Diego, on July 3rd, Lieutenant Byron Q. Jones, the young army aviator who recently established a record for continuous flight, while carrying a passenger, was receiving congratulations on July 4th on account of his achievement of the day before when he looped the loop four consecutive times at an altitude of 4,000 feet. He used a standard army biplane.

## New Curtiss Motor Factory at Buffalo

The increased demand for Curtiss motors necessitates expansion and a new factory is being established at Buffalo, in the Century Telephone Building, opposite to the Pierce-Arrow factory.

## Students at the Curtiss School at Buffalo

The following are the students training at the Curtiss School at Buffalo:

A. D. Johnson, San Francisco; James J. Lynch, late Sergeant-Major, U. S. A., New Mexico; William Sullivan, Newport, Rhode Island; Carl Mather, Paw Paw, Mich.; Pervus Loggie, Montreal, Ontario; C. A. Whitbread, Buffalo; Lieut. Frank Maythem, Third Battalion, N. Y. Naval Militia.

The two officers from the First Battalion of the New York Naval Militia are expected to join the school soon.

## U. S. Aviation Class Formed

Announcement has been made at the Navy Department of the selection of nine officers to form the first organized class in aviation. The officers will be assigned at once to the aviation station

at Pensacola for the study of the construction, assembly and repair of aeroplanes and later will learn to operate the machines. Practical shop work will be one of the chief features of the first period of instruction.

Another class will be selected a few months later in line with the policy of the Department, supported by appropriations by Congress, to expedite the development of aviation in the United States navy.

The officers composing the first class are Lieuts. E. F. Johnson, A. C. Reed, E. G. Haas, R. Paunack, W. W. Corry and Ensigns J. P. Murfleet and W. H. Scofield, all of the navy, and Lieuts. E. T. Evans and A. E. Cunningham of the marine corps.

## Wisconsin State Adopts Flying Boat To Locate Forest Fires

As a result of a recent flight undertaken by Jack Vilas in his Curtiss flying boat, with State Forester Griffith as a passenger, Wisconsin is the first state to adopt the aeroplane as an aid in locating forest fires.

On Tuesday, June 22nd, Messrs. Vilas and Griffith made a flight and when at an altitude of 1,600 feet a forest fire was located six miles from Trout Lake.

Forester Griffith was quick to appreciate the practical use to which such a machine could be put and enlisted Aviator Vilas in the service of the state forthwith so that Mr. Vilas is now a state forest ranger and undoubtedly the first aviator in the world to make use of his aeroplane for the protection of life and property from forest fires.

Mr. Vilas has been spending a vacation at the Manitowish summer resort and it has been a matter of satisfaction to the residents of the locality to note the prompt manner in which Forester Griffith availed himself of this new aid in the fight against forest fires, and the public spirited response of Mr. Vilas in accepting the commission.



His Excellency, Le Maharaja de Kapurthala, who recently made a flight with Mr. Raymond V. Morris, at San Diego, Cal., at the conclusion of which, and as a souvenir of the event, he presented Mr. Morris with his autographed photograph reproduced herewith





Ferdinand Eggena, who created a record by taking his pilot's license after five days' tuition

#### Record in Taking Aviator's License

A record for obtaining an aviator's license was broken at the Wright aviation field on June 26th, by Ferdinand Eggena, of New York City, just one week after entering the Wright aviation school.

The record course in the school was made as a result of a bet Eggena made at his club in New York during a discussion of European supremacy in the development of America's discoveries in aeronautics. Eggena declared that Americans could still carry off the laurels and would do so as soon as a few sportsmen entered the lists and showed the feasibility of aerial navigation for purposes other than exhibition work. He asserted that he could obtain a license in two weeks. His friends scoffed and the wager was made.

He went to Dayton on June 18th and went at once to the Wright field. Orville Wright was on the car and they talked over the plans and the first flight was made that day. Under the tuition of Howard Rinehart, instructor of the Wright school Eggena made four flights. Friday afternoon, a week later, he made his trial for the license before Dr. J. C. Eberhardt of the Aero Club of America. He made the required two figure eights, the altitude flight and two landings within the designated distance from a given spot. The landing must be made with 64 feet of a spot. Eggena made one landing with 30 feet of the spot and another within 25 feet of it.

His record is regarded by aviators as most unique. "He certainly must be an exceptional flier," declared Miss Katherine Stinson, Saturday.

"I know nothing about engines other than the little I learned in automobiling," declared Eggena Saturday.

"I expect to go back to collect a few bets and will return next week to buy my machine. I intend to purchase a Wright 6-X machine and one of the big cross country machines. My purpose in entering the game is to stimulate interest in cross country contests in the United States."

#### Re. Beckwith Havens, Chenevert, the Seelys, Lieut. Smith, Bill Thaw, Noel, Doherty and Callan

The following letter from Beckwith Havens to Grover C. Loening, dated Paris, June 4th, brings tidings from *autre mer* and news about veterans whose whereabouts will be of interest to all. The notes between parenthesis are given to enable newcomers in American aeronautical circles to identify the people mentioned.

Dear Grover:

I am still on this side. We have a nice apartment and I will probably be here several months more. During the past winter and spring we have spent our time between London, Paris, Lisbon, Madrid, Genoa, Milan and Rome, with some short trips to Monte Carlo. Had a great time in England with the Seelys. (Lyman J. Seely, Curtiss representative in Europe and Mrs. Seely). And they were over here for a bit with their Rolls.

Chenevert (Charles T. Chenevert, who was Becky Haven's passenger in the Detroit-Buffalo flight in 1913, and is Haven's business partner) left this week for Detroit, so I am now holding down Europe alone. However he expects to return as soon as he possibly can.

Yesterday I went out with Lieut. Smith (Lieut. Bernard L. Smith, late of U. S. Navy Aeronautical Section, connected with the U. S. Embassy in Paris) and E. Percy Noel, (late editor of *Aero and Hydro*) to the Neuport factory and saw some of their new stuff. We also saw the new speed Voisin and the two motor Caudron. That little Neuport is some bird.

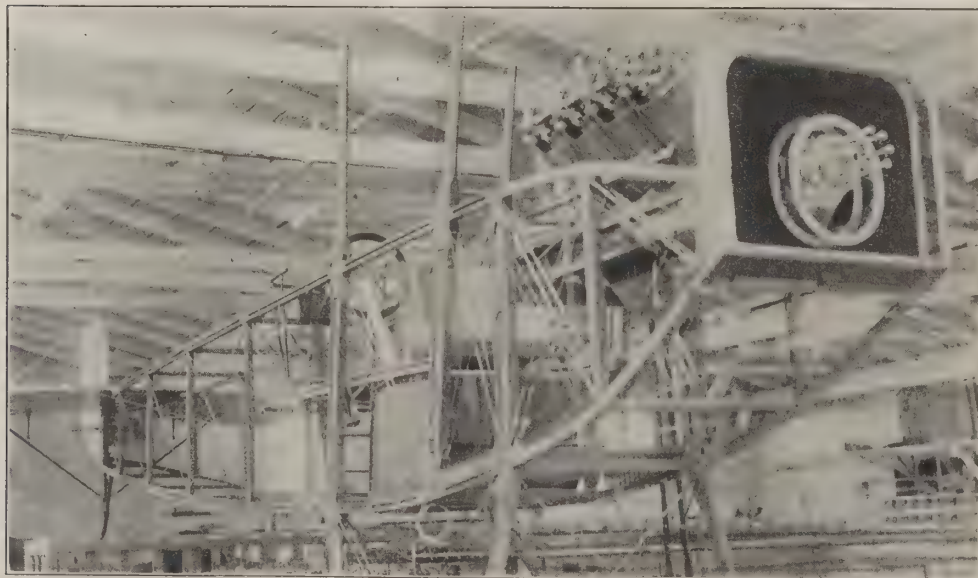
Bill Thaw blew in to-day on a forty-eight-hour leave and I'm to meet him in half an hour and hear all about it. He has been doing great work.

We look right at the Tower from our apartment and we see planes up all the time. I look out the window now and see two Voisins and a little Neuport. They are not letting the Taube in this far. The motor noise wakes me up every morning, sounds like the old days at Hammondsport.

I expect you have had a great winter at San Diego. Awfully sorry I didn't get out there, before I came away. When am I going to see you again? Seems like years since the last time.

Just heard a shout and skipped out on the balcony and there was a French Dig right over my head about 500 feet up. Going very prettily and turned over the Etoile and flew out of sight to the west.

Lots of talk about our relations with Germany. Wonder if anything will come of it?



Frame of one of the Curtiss Military Tractors

Let me hear from you once in a while. If you address things care American Express, 11 Rue Scrite, Paris, they will always catch me somewhere. You fellows must be doing some good things out there and I would like to hear about it.

Expect Lan Callan (*John Lansing Callan, Curtiss Representative in Italy*) and Gink Doherty (*William Elwood Doherty, Curtiss pilot, with Callan in Italy*) up from Italy before long.

Well, old summit, all the luck in the world and hope to see you before so very long. Regards to everyone,

Sincerely,  
(Signed) Beckwith Havens.

#### W. C. Robinson to Bring Out Biplane

W. C. Robinson, who a year ago made a cross country flight of 332 miles without stop, from his home in Grinnell, Ia., to Kentland, Ind., came to New York recently, looking into the prospects for the aeroplane industry which he found vastly improved owing to the war. He was met at the Aero Club by the aviation representative of one of the European powers. From the parasol monoplane in which he made his record, Mr. Robinson has turned to the building of tractor biplanes in response to the demand of the military men. He is using the same engine, however, a six-cylinder radial air cooled motor of 90 to 100 horsepower, also of his own design and construction.

Mr. Robinson hopes to better the American cross country distance record which he holds, before the summer is ended. A flight from Grinnell to Denver about 750 miles is to be attempted, he says. He is a firm believer in the advantages of the parasol type of monoplane.

Lieutenant Gregoire Piotrowsky, the Russian representative who has been gathering information about American aeroplanes, motors and supplies, has left the Aero Club of America, where he has been living, for Buffalo, where he will stay ten days.

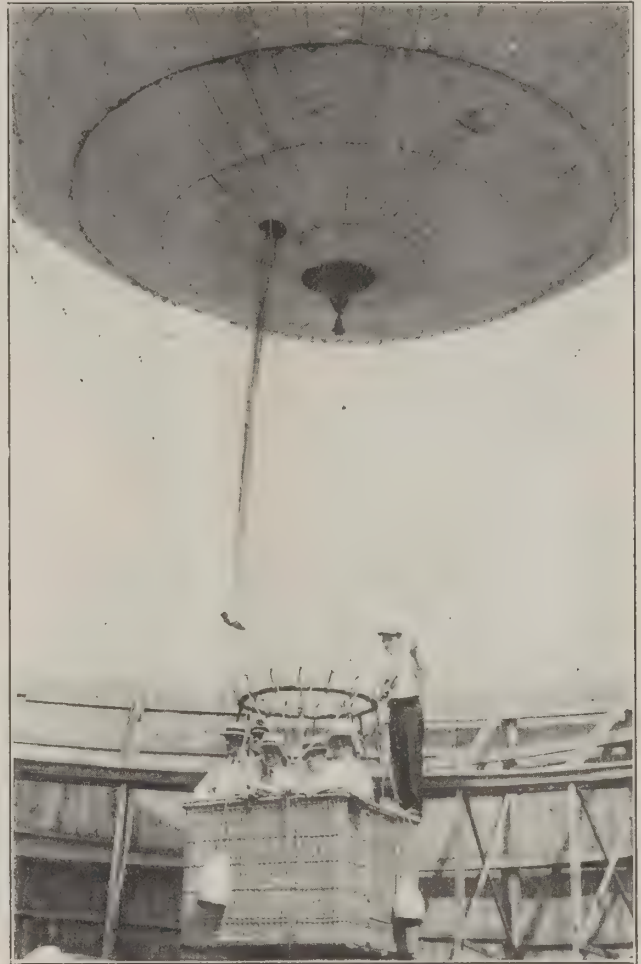
Captain F. C. Jenkins of the British Flying Corps, who placed many of the large orders for aeroplanes and motors, has returned to England. His successor is (name deleted by the censor).

Raymund V. Morris, manager of the Curtiss Aviation School at San Diego, California, and Mrs. Morris, during their honeymoon trip, paid a visit to the Aero Club of America and the Garden City Aerodrome. Mrs. Morris is just as enthusiastic over flying as her husband, and they both deny the rumor that Mr. Morris would retire from aviation after his wedding.

C. W. Robinson, the record holder for cross-country flying, and member of the Grinnell Aeroplane Co., of Grinnell, Iowa, is in New York.

Grover C. Loening, Chief Engineer of the Army Aeronautical Corps at San Diego is returning to San Diego after an inspection of the aeroplane and motor factories of the East.

Loening's interesting book, "Military Aeroplanes" is in great demand.

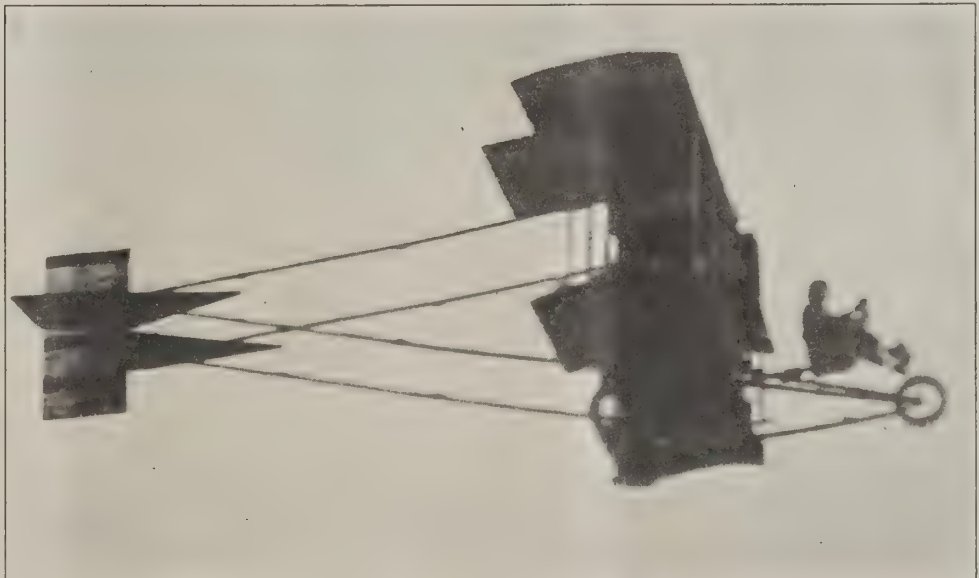


Capt. H. E. Honeywell's captive balloon "The Heart of America," which carries eight persons and a pilot, and makes ascensions daily at Electric Park, Kansas City. On its first trip this season Miss Helen Myers, daughter of George M. Myers, president of the Kansas City Aero Club, was the honor guest

Harry B. Snell, of the Curtiss Co., sailed for Europe, (destination deleted by the censor) on July 3rd.

Antony Jannus and Walter Johnson may go to Russia for the Curtiss Aeroplane Company. At date of writing they are getting their passports.

The Aeromarine Motored Biplane in which Art Smith thrills visitors to the San Francisco Exposition by looping-the-loop at night





### Aero Club of Texas Organized

By John B. Carrington, General Secretary, Chamber of Commerce of San Antonio, Texas

■ An awakening to the absolute unpreparedness of the United States in event of war for suitable aeroplane scouting is part of the program for national defense for war that has just been set in motion by some of the most distinguished and patriotic American citizens.

In line with this movement the business men of San Antonio, acting through the Chamber of Commerce, have, at the suggestion of Major General Frederick Funston, Commander of the Southern Department, formed the Texas Aero Club. This club comprises among its members the leading business men of San Antonio and distinguished soldiers such as Major General Funston, Brig.-Gen. R. K. Evans, Brig.-Gen. James Parker, Col. J. W. Heard, Col. W. S. Scott, and others, and the purpose of the club is to arouse among civilians an interest in aviation and to encourage young men to learn to be pilots.

It is unofficially announced as the policy of the United States army to encourage civilian interest in aviation and to lend, wherever possible, practical assistance in the training of civilians in the art. Under certain conditions the splendid aviation field at Fort Sam Houston, which lies just outside the city limits of San Antonio, will be placed at the disposal of the Texas Aero Club, and it is announced that the experience and assistance of the trained army aviators will be available to civilians in the learning of the art of flying.

In a few months Fort Sam Houston will become the aviation center of the army. The first aero squadron, which is the nucleus around which the "fourth arm of the service" will be built, will be located here. Plans for the Aviation Post, four miles north of the city on the Austin Road, have been drawn and bids advertised for construction work. In its completed form the Aviation Post will represent an investment of between \$150,000 and \$200,000. Eight aeroplanes of special design will be in use and the force will consist of about sixteen officers, who are experienced aviators, and ninety enlisted men.

The assistance of these trained aviators in teaching civilians the art of flying is certain to arouse, not only in San Antonio, but throughout the country, a great deal of interest in the art. Here is the field of action for the wealthy young man who wants to combine sport with patriotism. By coming to San Antonio he can learn the art of aviation under the most advantageous circumstances with a climate ideally adapted to it, a climate passed on by the United States Army after careful investigation, good water supply, and army officers who are gentlemen and good sportsmen. He can have the advantage of living in a good hotel and participating in the other sports, such as golf, polo, tennis and the like, and take his place in the delightful social life while practising the flying game. In so doing he will learn an art that will make him of immense service to his country in event of hostilities.

The aeroplane originated in the United States as everyone knows, and yet in both our Army and Navy to-day, according to government reports, there are not a baker's dozen aeroplanes available for service. France started in the great war with 1,400 aeroplanes; Germany with 1,200, and England with 1,000. It has been stated in the public prints that there are not five hundred aeroplanes and pilots in the whole United States.

This is the condition of affairs which the Texas Aero Club hopes to lend its influence towards overcoming. The Club also hopes to lend its influence in bringing the aeroplane into commercial use and is making an effort to have aeroplane mail routes established.

The well-known aviators, the Misses Stinson, live in San Antonio and have done a great deal of flying here. There is a group of young men who also own an aeroplane and others are figuring on buying planes. Before another year elapses San Antonio expects to become one of the principal aviation centers of America. Through its Chamber of Commerce it is already making efforts to secure the establishment of aeroplane factories in and around San Antonio.

Near this city is located the Medina Lake, a body of fresh water as large as Lake George in New York State, which can be used in testing hydroplanes. The Chamber of Commerce has secured the promise of ten acres of land and other concessions for any aeroplane factory that will locate here. The adaptability of the climate, the fact that this city is the aviation center of the army, with an abundance of cheap Mexican labor, cheap fuel, and other conditions, makes it a logical place for the manufacture of aeroplanes.

The officers of the Texas Aero Club are: A. B. Weakley, president; Major General Frederick Funston, first vice-president; L. B. Clegg, second vice-president; Gen. James Parker, third vice-president; Harold Kayton, secretary and Richard Negley, treasurer. The Chamber of Commerce of San Antonio will be glad to answer any inquiries on the subject of aviation.

### Lees Flies Over Steamer at Night in Illinois Naval Reserve Flying Boat

The members of the Associated Clubs of the World who recently made a moonlight cruise on the steamer *Theodore Roosevelt*, at Chicago, were treated to a novel experience on June 23rd, when Walter E. Lees, the Chicago naval reserve pilot, and Stuart MacDonald, flew over the ship and dropped a great number of carnations on deck.

Without anymore fuss than if starting on a daylight trip Lees started off shortly after the *Roosevelt* had pulled out into the lake and was soon alongside the ship.

As he approached the ship, Mr. MacDonald, who owns the flying boat, directed a searchlight to the front deck and then as the craft swooped down over the steamer he dropped large bouquets of red carnations and ferns into the crowd of spectators.

Immediately there was a scramble on deck. Those who got the bouquets were "rushed" as soon as they had picked them up, however, and in a short time every one on board had a souvenir.

After the flowers had been dropped Mr. Lees and Mr. MacDonald flew around the steamer several times, at times only a few feet from the water—the next second several hundred feet in the air.

The majority on board had never seen a flying boat fly at night, and the ease with which the craft was manipulated was a source of wonderment to all.

Night flying has been done in Chicago only for exhibition purposes heretofore.

### Milwaukee Aviator Has Mishap

John Kaminski, who has been persistently frowned on by fortune, again had hard luck recently while testing his hydro-aeroplane at McKinley Beach, Milwaukee, recently.

After having the motor stop on him the first trip when he was a long way from the shore and after having to be towed in by a launch from the government cruiser Tuscora, he essayed a second flight only to meet with a mishap on returning when he ran into the beach and smashed the pontoon of his machine.

### Pennsylvania Aero Club Station Opened

A loud-whirring military biplane, carrying bombs and operated by a titled foreigner, swooped over the Philadelphia Navy Yard at League Island, July 3rd, and dropped a smoking bomb from a height of a thousand feet. Then with the speed of an express train, the plane shot through the sky to Point Breeze Park, where an entrenched aeroplane bomb gun and three companies of the 2nd Regiment, National Guard, of Pennsylvania, tried unsuccessfully to bring the daring birdman down.

After victoriously circling in the air the aeroplane came to rest in the plain behind the Navy Yard. Here it was "captured" by enthusiastic members of the Aero Club of Pennsylvania and naval officers. Hundreds of sailors, marines and civilians witnessed the "capture."

The aerial attack, which was made by Lieutenant Baron N. von Figyelmessy, an Austrian, was the feature of the opening of the Pennsylvania aeroplane station. This is a 30-acre plot, with 1,000 feet of river front, at League Island. It was assigned to the club by the Navy Department, and is officially known as Block 16. Here the Aero Club, with the co-operation of the navy yard authorities, intends to develop an efficient aviation corps for the State. It also will be a reserve force in the event of war.

Navy yard officials helped the club to celebrate the opening of its aviation field. Captain Knapp, the new commandant, scores of officers and hundreds of enlisted men were on hand to welcome the officers and members of the club. Many of the members were accompanied by their wives and children. They were taken to the naval station from the Municipal Pier on the Government tug Modoc. As the boat neared the island the water approaches were inspected by the flight experts.

Commander C. B. Price, who has taken an interest in the club's movement for the creation of an aerial corps, and who was recently elected a member, met the visitors. With Joseph A. Steinmetz, president of the club; Laurence Maresch, treasurer, and other officers, he inspected the proposed site for a hangar, near the waterfront. Until funds are raised for a permanent hangar, a temporary one of canvas, 25 by 40 feet, is to be erected.

Interest, of course, centred on the demonstration of the use of the aeroplane for naval manoeuvring and scout duty, by Baron Figyelmessy. This aviator was one of the first to volunteer his machine and his services for the proposed State aerial fleet. He made a beautiful start and a fine landing, which brought praise from airmen. Among them were W. D. Brown, the inventor of the flying boat; Robert C. Glendinning, Clarence P. Wynne, a director of the Aero Club, and Charles Peddle. Before the flight, Mr. Steinmetz exhibited a low tension aero bomb and its discharging apparatus, similar to those used by British and Russian airmen.

(Continued on Page 411)



# Dropping Three Thousand Feet by Parachute

The Valuable Achievement of Miss Tiny Broadwick



Besides, she said, she was impelled by a desire to prove to Uncle Sam that an aerial life preserver invented by her father is a four-ply success.

They told Tiny Broadwick finally to go right ahead—in the interests of science and her country.

A conqueror of the air since a child of 6, and the survivor of more than 600 sensational leaps, in which she has never sustained anything worse than a few broken bones, little Tiny Broadwick said that she was ready for the newest sensation.

Her life-saving device was carefully arranged and as Brig. Gen. George P. Scriven, chief of the aviation bureau

to stand erect. She took one step forward to the edge of the framework. Then she dived, head downward, toward the earth.

Would the parachute open? Two seconds told the story, but those two seconds seemed like hours to those below. And then of a sudden the parachute was ripped from her shoulders by a string attached to the fuselage of the aeroplane. It caught the air. It opened wide! Gracefully as a bird, the intrepid girl floated to the ground. A rabbit, which scampered from a sagebrush just as she struck the earth, frightened her for the moment and caused her to lose her balance. She quickly regained her composure, however, and laughed merrily over the incident.

"It was much easier than leaping from a balloon," laughed Tiny, crawling from her parachute. "There was not so much of a strain when the parachute opened because I was dashing sideways as well as downward.

"You're a plucky girl," said the brigadier general.

"That's what they say," said Tiny. "But I don't call it pluck. I call it joy. There's no real fun except far up in the air."

Gen. Scriven shook his head. He said he didn't know. But he added that he hoped it would continue to be all joy and no sorrow for little Tiny Broadwick in the dangerous occupation that she loves so well.

**D**IFFERENT traits or peculiarities are known to run in different or peculiar families.

Even unto the third and fourth generations, it has been said.

The paramount trait of the Broadwick family of Ocean Beach, is to defy death.

That's why Tiny Broadwick, a slip of a girl of 19 summers, is today considered the most daring of female aeronauts the world has ever known. Her father was an ascensionist and parachute jumper before Tiny was born. His father was practising that same perilous occupation when Tiny's father was a very little boy.

To Tiny Broadwick ballooning, aeroplaning and parachute jumping are very natural things to do. She is more at home 2,000 or 3,000 feet in the air than she is with both of her tiny feet planted on the ground. She is happier, there, too.

Just the other day the bird-girl electrified army aviators at the North Island camp in San Diego by announcing that she was preparing to plunge from a military aeroplane while dashing through space at a speed of 75 miles an hour.

They tried to talk Tiny out of it, but she laughed at their fears and said a little feat like that would be easy for most any member of the Broadwick family.



of the U. S. army, looked wonderingly on, Tiny sailed skyward.

With Gen. Scriven on the ground below, all equally excited, were a score of skilled army aviators, and a party of people from the Hotel del Coronado.

When Tiny Broadwick started on her hazardous journey, she wore a natty walking suit. The life preserver, encased in canvas, hung like a knapsack over her shoulders. Oscar Brindley, Wright instructor here, was at the wheel.

At a height of 1600 feet Brindley suddenly dropped 100 feet and then raced straight ahead the length of the field.

Suddenly Miss Broadwick was seen





## Motor Contest with \$150,000 in Prizes Proposed to the Navy Department

A MOTOR Contest, with \$150,000 in prizes is proposed to the Navy Department, by Mr. Alan R. Hawley, President of the Aero Club of America, in a letter to Secretary of the Navy Josephus Daniels.

The letter follows:

My dear Mr. Secretary:

The urgent need for efficient and reliable aeronautical motors and for a motor competition similar to that held in France, England and Germany has been given much consideration by the Governors of the Aero Club of America. The conclusion reached is that holding a motor competition, with awards amounting to not less than \$150,000 would afford a prompt and economic solution to the serious problem of building aeronautical organizations for the Navy, the Army and the Organized Militia, and of fostering the use of aeroplanes for commercial and sporting purposes.

The amazing achievements of aircraft in the war have emphasized the necessity of building substantial aeronautical organizations in connection with the Navy, the Army and the Militia, and Congress, at the next Session, will undoubtedly make provision to meet this need. As we have practically no equipment, everything will have to be provided. This will require about \$7,500,000 for the Navy; \$5,000,000 for the Army and \$5,000,000 for the Militia.

These sums may seem large, but they are not, considering that a large part represents the initial cost of establishing these aeronautical organizations; the cost of giving aeronautics a "start." Half of this amount will represent the first cost of organization; the balance can best be invested in equipment after the problem of getting efficient aeronautical motors has been solved by holding a substantial competition under the auspices of the Navy and jointly by the Navy and Army.

The following conclusions reached by the Governors of the Aero Club of America during their consideration of the aero motor problem, will undoubtedly interest you:

The need is for motors of from 60 horsepower to 250 horsepower. While military aeroplanes are now wanted with motors of not less than 140 horsepower, the desirability of having dual power plants is generally recognized, therefore the development of reliable motors of from 60 to 100 horsepower should be encouraged as much as motors of higher power.

The competition should, therefore, be for at least three classes, as follows:

First Class—from 60 to 100 horsepower

Second Class—from 100 to 150 horsepower

Third Class—from 150 to 250 horsepower

2. The competition, in order to bring the desired

results, must have substantial prizes. Good engineers and motor builders, who have, at large cost, partially developed aero motors, are in great demand for many purposes, and whereas developing aero motors is an expensive process, to insure success it is essential that the awards in orders and prizes offered be sufficient to justify builders in entering the competition as a business proposition.

3. We believe that good results could be obtained by offering \$50,000 for each of the three classes, to be divided into prizes of \$25,000 for first; \$15,000 for second and \$10,000 for third.

4. The competition should be for the best results obtained in thorough tests rather than for the motors that meet given conditions, as the latter is restrictive.

In a substantial competition, from two to five entries may be expected from most of the following concerns, which are either manufacturing, or have expressed their intention to develop, aeronautical motors:

Aeromarine Plane and Motor Co., Nutley, N. J.

Ashmussen Co., Woonsocket, R. I.,

Burgess Co., Marblehead, Mass.

City Engineering Co., Dayton, O.

Cooper Air Craft Co., Bridgeport, Conn.

Curtiss Motor Co., Hammondsport, N. Y.

Duesenberg Motor Co., St. Paul, Minn.

Grinnell Aeroplane Co., Grinnell, Iowa.

Gyro Motor Co., Washington, D. C.

Hall-Scott Motor Co., San Francisco, Cal.

Harriman Motors Co., S. Glastonbury, Conn.

Herfurth Engine Co., Alexandria, Va.

Johnson Brothers, Terre Haute, Ind.

Kemp Machine Works, Muncie, Ind.

Macomber Motor Co., Los Angeles, Cal.

Maximotor Makers, Detroit, Mich.

Packard Motor Car Co., Detroit, Mich.

Polyplane Motor and Metal Mfg. Co., St. Louis, Mo.

Roberts Motor Co., Sandusky, O.

Sterling Engine Co., Buffalo, N. Y.

B. F. Sturtevant Co., Boston, Mass.

Van Blerck Motor Co., Monroe, Mich.

Wells-Adams Motor Co., Rochester, N. Y.

The Wright Co., Dayton, O.

Most of these concerns have motors suitable for aeronautical purposes. The competition will define the status and bring out the best.

We heartily hope that it will be possible for the Navy Department to hold such a contest, in which event you may rest assured of the hearty co-operation of the Aero Club of America in every way possible.

Very sincerely yours,

ALAN R. HAWLEY,

President, Aero Club of America

## Progress of the National Aeroplane Subscription

PRESIDENT Emanuele Estrada Cabrera, of Guatemala, has just sent a subscription of \$200 (in American money) to the National Aeroplane Fund now being raised by the Aero Club of America for developing aviation corps for the National Guard and Naval Militia of the states.

President Cabrera, in his letter, expresses his interest in the movement and wishes the Club success in its undertaking. He is a member of the Aero Club of America, is keenly interested in aeronautics, and takes active part in the Club's projects. He is a member of the Committee on Aeronautical Maps and Landing Places.

Other subscriptions received during the week include one from Dr. M. O. Terry, of Mamaroneck-on-the-Sound, New York, who writes:

"It really appears to me in view of our great interest in other people (the freeing of the Cubans) and the millions and millions spent likewise in the Philippines, that some wisdom might be

inculcated into the men who represent the people at Washington—sufficient at least, to make an appropriation sufficient for an equipment which will place every Department of the Army and Navy in a position beyond question for defence. Your work, I note, is simply initiative, in order to direct the attention of all to the importance of the work you have in hand.

"This is only one of the many neglected features of our Government as to National preparedness. We have the lesson now before us of what great nations like England and Russia, with their vast wealth, have to suffer because of lack of adequate preparation and of munitions of war.

"Wishing you success in your efforts to organize a propaganda to educate the people, so that they will act firmly as a unit for adequate appropriations for up-to-date preparedness, I am

Yours very truly,

(Signed) M. O. Terry."

The subscriptions of the last week in June were as follows:

President Emanuele Estrada Cabrera	\$200.00
Mrs. Perle Ward Root	100.00
D. B. Van Emburgh	50.00
T. Jefferson Coolidge	50.00
Homer E. Sawyer	25.00
Dave H. Morris	25.00



E. Lascaris.....	\$25.00
Joseph L. Seligman.....	25.00
Henry Mohl.....	10.00
Chas. F. Uebelacker.....	10.00
William D. Sargent.....	10.00
Chas. C. Auchincloss.....	10.00
N. C. Kingsbury.....	10.00
N. J. Gould.....	10.00
Harold B. Mowry.....	10.00
Edmund L. Gardner.....	10.00
Anonymous.....	10.00
Thomas D. Murphy.....	5.00

The Aero Club is in receipt of many applications daily from men who offer their services to the National Guard and Naval Militia to form aviation corps. As the Club's interest in the matter is limited to getting the men and aeroplanes for the Militia authorities, the volunteers are referred to the heads of the National Guard and Naval Militia, to whom the offers of aeroplanes and the services of aviators also have been referred.

The use of a Wright biplane for the National Guard of the States of New York, New Jersey and Ohio, each to use it in turn, has been offered by Mr. Ferdinand Eggena, the sportsman.

Mr. Eggena, who has recently taken up aviation as a sport, has just returned to New York from Dayton, Ohio, where he learned to fly. He took his pilot license in five days, which is a record. He received his first lesson at the Wright School on Monday, June 21st, and passed his test for the pilot license on Friday, June 25th. His machine is a Wright 6X biplane of the military type, and he also expects to acquire a flying boat in the near future.

Mr. Eggena inquired at the Aero Club of America regarding the aeronautical needs of the Militia of New York, where he has resided for many years; of New Jersey, his native state and of Ohio, where he learned to fly. Upon finding that aeroplanes were needed by the Militia of all these states, he offered to place first his Wright biplane and later his flying boat, at their disposal. Mr. Eggena is a Princeton graduate, and resides at the Waldorf Hotel, New York City.

This makes eleven aeroplanes of both types that have been placed at the disposal of the Militia of different states, so far.

To enable the Third Battalion of the Naval Militia of New York state to start the organization of an aviation division, the Curtiss Aeroplane Company, who had already offered a flying boat and a course of instruction for a pilot and a mechanic of the Naval Militia, have offered to train an additional officer from the Third Battalion, which is located at Buffalo, the home of the Curtiss Co. Lieutenant Frank Maythem, Junior Grade, has been appointed to take the course of training, and is now attending the Curtiss School at Buffalo.

The officers of the First Battalion, of which Commander Charles L. Poor is the head, have been selected and will go to the School within a few days. They will, of course, be trained in the regular school machines, so that the New York Naval Militia will receive a brand new flying boat when they have been graduated. It is to be of the naval type, which type has been delivered in such large numbers to the European countries.

Contributions of the first week in July to the National Aeroplane Fund, received by the Aero Club of America, 297 Madison Ave., are as follows:

Alfred I. du Pont, Wilmington, Delaware.....	\$500.00
Henry B. Joy, Pres. Lincoln Highway Assn.....	250.00
The United States Rubber Co.....	100.00
Charles Steele, New York City.....	50.00
Mrs. C. W. Cooper, New York City.....	25.00
Miss Clementine Furniss.....	25.00
Theophilus A. Browner, Westhampton, N. Y....	10.00
R. S. Munger, Birmingham, Alabama.....	10.00
Wm. Decatur Parsons, Bayshore, L. I., N. Y....	10.00
Morgan G. Barnwell, Tuxedo Park, N. Y.....	10.00
Dr. Isaac Louis, New York City.....	5.00
Howard Lilienthal, M. D., New York City.....	5.00

The total lack of aeronautical equipment or resources on the part of the Militia is shown by the following excerpts from letters from Commanding Officers of the National Guard and Naval Militia of different states:

*From Acting Adjutant General LeRoy A. Hall, of the Militia of Vermont.*

"There are at present no members of the Militia in the state who are interested in aviation.

"The National Guard of this state consists of one regiment of Infantry and the cadets at Norwich University organized as a squadron of Cavalry. You will therefore see that our facilities are very limited.

"The annual camp of the 1st Infantry is to be held on the state reservation adjoining Fort Ethan Allen, Vermont, August 2-11, 1915, and if you could arrange to send an aviator to the camp, it might awaken the interest of some of the members of the regiment. There are no funds, however, at my disposal for this purpose."

*Captain Frank S. Splatt,*

*Signal Corps, Virginia Volunteers, writes:*

"In reference to raising a flying corps in connection with the Signal Corps, I have one aeroplane designer in my company whose flights have been numerous and is probably known in your club. His name is Greenhow Johnston. We are anxious to get a plane, or several, for that matter, but the same old question of finances is in the way. We are in a splendid Armory and while our company is new, we are enthusiastic and are open to the proposition of taking up the flying end.

"If there is any way you can assist us to get a plane, I would greatly appreciate your help in the matter."

*From Grant T. Stephenson,*

*Commander Michigan Naval Brigade:*

"The principal thing which interferes with the Naval Militia in participating in aeronautical work is the lack of money. The appropriation for the support of the Naval Militia of the United States has been in the past, in most states, very much less than the needs of the organization. This situation has now been somewhat relieved by an Act of Congress which gives more national support to the Naval Militia. We are not, however, as yet in any position to take up any new expense.

"Primarily, the Naval Militia is to train men for the fleet, and toward that end what money we have is expended. I should like very much to see the Naval Militia of Michigan, which I have the honor to command, take up aeronautic work, providing the necessary support could be given them from the outside. I, personally, am very much interested in it and will be glad to co-operate at all times in furthering the work in the Naval Militia. We have a number of officers and men who would be very well qualified to take this up. I see my cousin, Stephenson MacGordon, is already a member of one of your Committees."

*From Adjutant General George A. White,*

*Oregon National Guard.*

"There are six professional fliers available for a corps here, although the matter of raising the necessary funds for a machine continues to be more or less of a problem, inasmuch as it is doubtful whether or not public subscriptions in this particular district would be of sufficient volume to finance the plan."

*Captain William H. Amerina,*

*Alabama National Guard, S. C., writes in part:*

"The Alabama N. G. has no aeroplanes but, of course, we greatly need at least one. If we were provided with one and a volunteer aviator-instructor, I could furnish from ten to twenty men who would study and apply themselves. They are already over-enthusiastic regarding your letter. One of them has made a text-book study of aeronautics.

"I refer you to Captain Wm. M. Fassett, U. S. S. C., Washington, D. C., as to my company. I hope you will pardon me for saying so, but I have an exceptionally enthusiastic and efficient command.

"I think Mr. John Hays Hammond's coast defense idea a splendid one, and I shall be pleased to hear further from you."

*From J. Clifford R. Foster,*

*Adjutant General, Florida Militia:*

"There has been no effort to organize an aero service for the National Guard or Naval Militia of Florida, and I know of no men commissioned or enlisted in the service at this time who have had experience or who have taken the matter up. We have no appropriation for the encouragement of this branch of the service, and I am uncertain whether or not anything can be done in the matter at this time.

"I shall be glad to give the subject matter of your letter and the purposes of your organization publicity through the Press, and it is possible that it may result in some good."

*Captain Ruby D. Garrett, of Field Co. "A,"*

*Signal Corps, National Guard of Missouri, writes in part:*

"In my organization I have several men who are interested in and who have given some study to aeronautics. We have facilities in that there are numerous parks in and near Kansas City which would adapt themselves readily to aeroplane practice, one of which, because of its frequent use for this purpose is known as Aviation Park. Our Armory at present could not be used to house an aeroplane, but could very quickly and cheaply be changed so as to adapt itself to this purpose.

"I can here secure any number of competent men, with more or less technical training, who would be ideally equipped for this work. The difficulty that confronts us is to secure an aeroplane and other necessary apparatus. Also the lack of funds with which to promote the work. Enthusiasm on the part of very capable men, I must say, is my chief asset.

"For two years we have been working on this proposition, and participate in a limited extent in the exhibition work that is given in the city. We have received several promises of local help, but so far have not been able to advance very far.

"Be assured that we will gladly co-operate with you in every way possible. I would like to know just what your specific plans are with reference to an organization of the character of mine."



# AEROPLANE ENGINES\*

By Neil MacCoull, M. E.

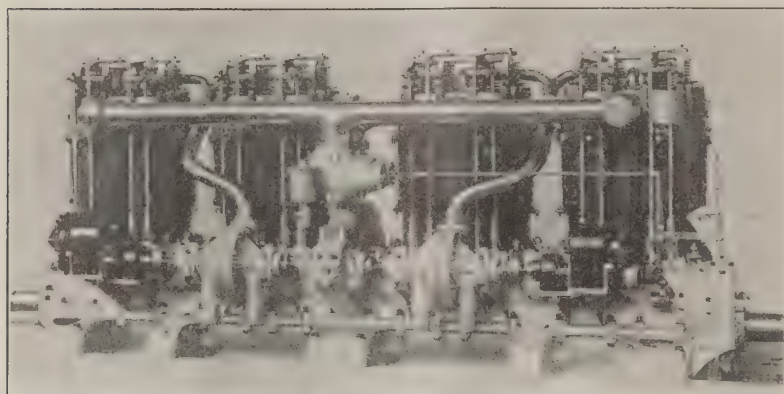


Fig. 20.—240 H.P. Mercedes Engine for Dirigibles. It is supplied with two carburetors and two intake pipes, one in front of the other so that but one is seen in this cut. The pipe shown supplies the two outer pairs of cylinders, the other the two inner pairs. Each cylinder has one intake valve and two exhaust valves. Water is circulated through the crank-shaft to cool the bearings

## Vibration

In the conventional four- and eight-cylinder engines the inertia forces are not completely balanced, and will cause vibration. In the former the total unbalanced force is usually about equal to the inertia force in one cylinder, and causes vertical vibration. The force causing vibration in the 90° "eight" is about 40 per cent. greater than the inertia force of one cylinder, but since this latter is only about one-half as great as that of the four-cylinder engine, the vibration of an "eight" will be about 70 per cent. of that of a "four" of the same power and piston speed.

The six-cylinder engine is theoretically perfectly balanced, as are also those engines with revolving cylinders. It is possible to perfectly counterbalance a radial engine of any number of cylinders except for an almost negligible force resulting when the connecting-rods are pinned to a master rod instead of bearing on the crank-pin. As in the automobile, vibration has a tendency to loosen bolts, wires and joints of all types, besides being intensely disagreeable; and should accordingly be kept within limits.

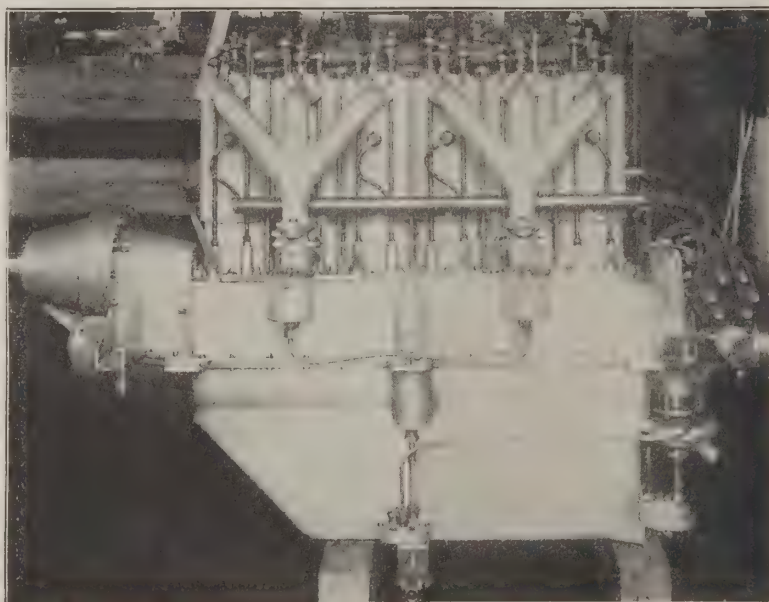


Fig. 24.—100 H.P. Six-Cylinder Aeromarine Engine, with Concentric Valves and Electrolytically Deposited Water Jackets

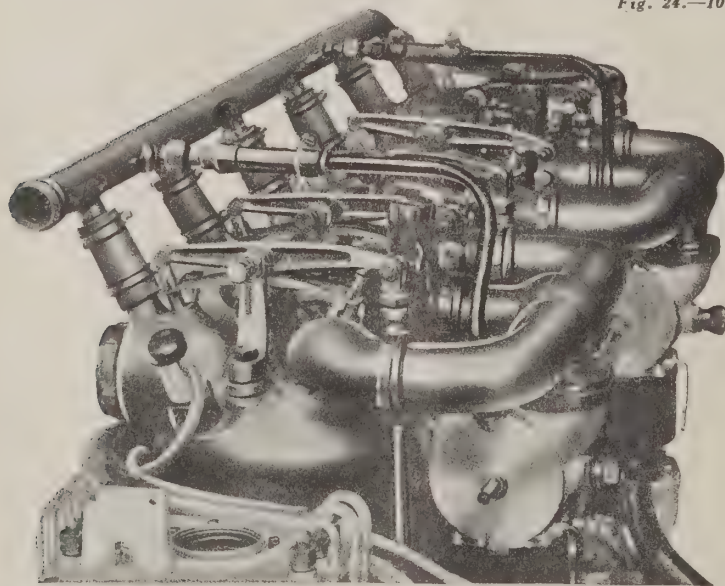


Fig. 26.—The Valve Mechanism of the 90 H.P. Austro-Diamler, showing the laminated leaf springs characteristic of these engines. Both valves are operated through one rocker and push-rod by two cams: one cam lifting the rod, the other pulling it down

## Gearing

Another drawback to high engine speeds is that the propeller must be driven through gearing in order to develop its best efficiency. Much of the loss of efficiency resulting from driving through gears may be regained in the propeller, however, because the speed of most direct-driven propellers is higher than advisable for their best efficiency, and when gearing must be used, the propeller may just as well be run at a lower speed than is now general, with a resulting higher efficiency.

## Cylinder Arrangement

The weight of all parts of engines of small power will vary nearly as expressed by formula (4). Hence the total weight of all the cylinders of an engine will be entirely independent of the number of cylinders, because both the weight and power of any cylinder

are functions of the square of the bore. This means that if the power of one cylinder be divided among two, each of the smaller cylinders will weigh but half as much as the first; hence the total weight will be unchanged. For large engines, in which the weight variation will follow formula (3) more closely than formula (4), it can be shown that there will be a decided saving in the total cylinder weight as the number of cylinders is increased.

The greatest saving in weight effected by the cylinder arrangement is in the crankcase and crankshaft. The longer these are the heavier they must be in proportion, because of the increasing necessity for rigidity when many bearings must be kept in line. Consequently, when all cylinders are in line, a six-cylinder engine will be heavier than a "four," and an "eight" and a "twelve" will be correspondingly heavier, to say nothing of their awkward length. The V-type cylinder arrangement saves about 50 per cent. of the weight of the shaft and crankcase. In this arrangement the eight-cylinder engine is still lighter than the "V-twelve." The last step in the reduction of the weight of an engine by cylinder arrangement, is that type in which all cylinders are equally spaced about a

\*Continued from Page 373, July 5, 1915



single crank. This construction brings in, however, many difficulties unknown to the vertical and V engines, particularly that of oiling when the cylinders are radial in a vertical plane. All details are so completely different from those of any type of engine used in automobile practice that experience gained in this line will be of little value. The designer must plunge into a very new and comparatively undeveloped field, but the possibilities of this type are a great inducement to develop it.

## Engine Types

Manly (*American*)

THE first successful engine for an aeroplane was designed and completed in 1901 by Mr. Charles M. Manly for Professor Samuel P. Langley, "the father of aviation." At the present time it is impossible to conceive of the difficulties encountered in building this engine. That Mr. Manly produced a really first-class engine weighing but 2.4 pounds per horsepower at a time when all automobile and engine constructors of Europe refused to build an engine weighing even 12 pounds per horsepower, is a matter of great credit. The five-cylinder radial engine shown in section (Fig. 2) was decided upon after experimenting with water-cooled radial and air-cooled radial and revolving engines, Mr. Manly

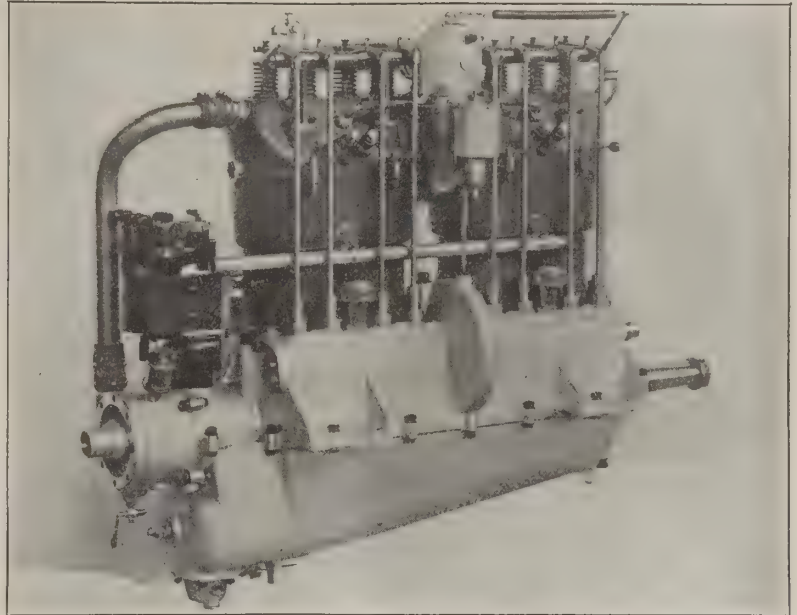


Fig. 23.—70 H.P. Mercedes. Notice the mounting of the magneto. The cam-shaft is driven by a gear at its center

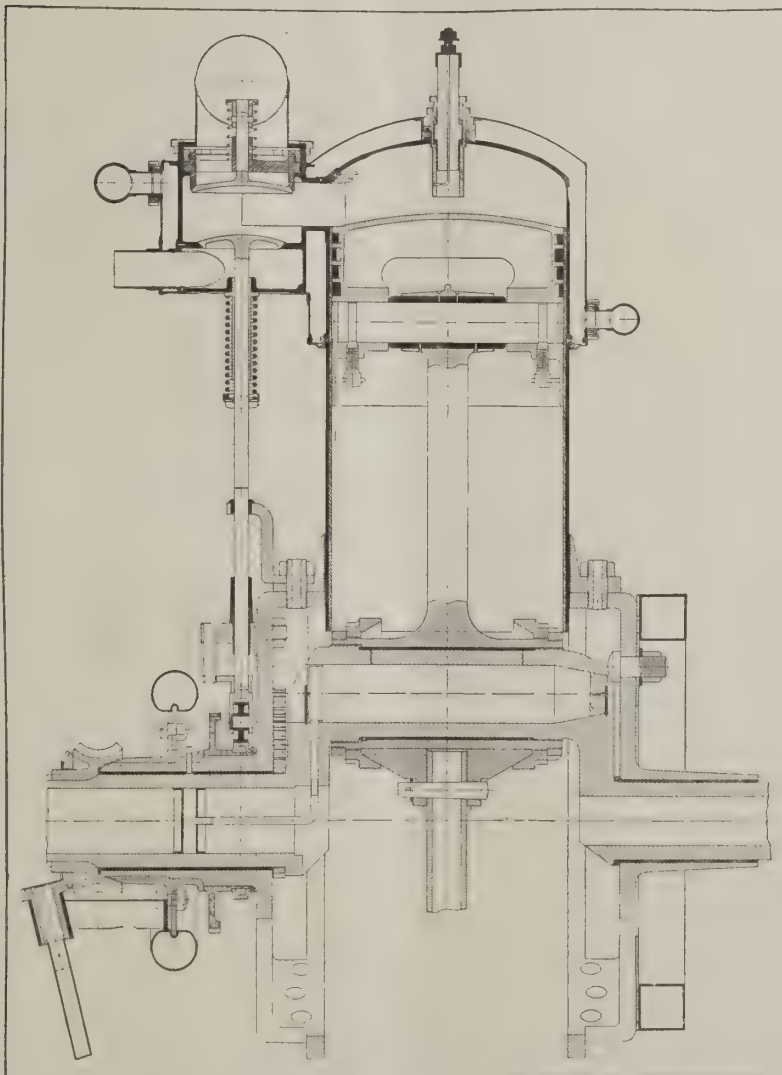


Fig. 2.—The 5-Cylinder, Water-Cooled, Radial Manly Engine, Built in 1901

being led to believe that a water-cooled stationary radial engine would give the best results. Each cylinder of this engine

was drawn from a 3-16-inch steel plate, and then machined inside and out, leaving a 1-16-inch shell. To this shell was brazed the valve chamber which had been machined from a solid forging. The jackets, of sheet steel only 0.020-inch thick, were brazed on by Mr. Manly himself, since no one could be found who would undertake the work. In spite of the trouble involved, it was less difficult than to deposit copper jackets electrolytically, so undeveloped were these processes only fifteen years ago. In order to minimize the lubricating difficulties which might have been experienced if the pistons were to bear directly against the steel cylinders, cast iron liners 1-16-inch thick were shrunk in. Even though engine builders had declared such construction impractical, if not impossible, no trouble was ever experienced with these liners, and they served their purpose admirably. The difficulties encountered in attaching five connecting-rods to one crank-pin without sacrificing necessary bearing area, were solved by the use of a master rod, in which construction one rod has a sleeve around the whole crank-pin, as is usual with single cylinder engines, and the other four rods bear on the outside of this sleeve. In this way the small bearings between the four rods and the master rod receive none of the rubbing effect due to the rotation of the crank-pin, except that of slipping a very short distance over the sleeve during each revolution on account of the angularity of the rods. This construction was successful from the start and is now used in a slightly modified form in nearly all radial and revolving engines.

In order to get a reliable and equally hot spark in each cylinder, the scheme was originated of using one spark coil and vibrator for all cylinders, with a distributor to select the correct cylinder for each spark. All procurable spark plugs were very unreliable because of the frequency with which they became short-circuited with carbon, and to correct this plug shown in Fig. 2 was made. The pocket around the points which is now known to be so valuable eliminated all this trouble.

(To Be Continued)





# Foreign News

Edited by L. d'Orcy



## Austria

The following official bulletin concerning the operations on the Italian front was issued by the War Office on June 28:

"A naval aviator on the 27th bombarded near Villa Vicentina a hostile captive balloon and compelled it to descend. He also, on the 28th, successfully dropped bombs on a hostile park of artillery at San Canciano, and badly damaged a steamer at Sdobba, so that the stern sank to the bottom."

As a reprisal for a Serbian attack near Chavatz, the Austrian War Office announces one of the Austrian aerial squadrons bombarded, on June 29, a wharf at Belgrade and a military camp at Orase, southwest of Obreno, with great success.

## France

The French War Office announces the following:

"On the morning of June 27 one of our aeroplanes succeeded in dropping, with success, eight shells on the Zeppelin hangars at Friedrichshafen. Motor trouble obliged him to make a landing during his return; he succeeded in reaching Swiss territory at Rheinfelden."

According to the London *Daily Mail* the French airman who was none other than the famous Eugene Gilbert, hero of many long cross-country raids, flew low over the sheds so as to make sure of his aim and was met by a very violent fire from numerous anti-aircraft guns. Although a shell pierced the fuel tank of his machine, Gilbert succeeded in setting afire one of the airship sheds, but then motor trouble developed and the airman was forced to land on Swiss territory, where he was interned. A French newspaper man, who has seen Gilbert, writes as follows:

"Thanks to the courtesy of the Commander at Rheinfelden, I have been able to shake hands with our unfortunate compatriot, Gilbert. I found him very despondent. He expressed great sorrow at being no longer able to serve his country."

The Wurtemberg Minister of War issued two days after the raid a statement saying that the Zeppelin sheds were not damaged.

## Great Britain

A Neutral Observer writing in The London *Times* says:

"All Germans appear to have unbounded faith in the Zeppelins. Technical experts are striving ceaselessly to produce a more efficient aeroplane. A German flight Captain informed me that the Taube pattern of aeroplane had been discarded by the authorities as wholly unsatisfactory for military purposes, in view of its inability to carry a sufficient load, and that the Germans were now exclusively making a biplane of the improved Farman type."

"To many Germans it is only a question of time before a phalanx of Zeppelins and aeroplanes, advancing four abreast in battle formation, will sweep over England, and in a night attack will destroy the chief arsenals, factories, etc., of the land and above all of London. Inquiries as to when this event will take place are met with the cryptic reply: 'When we have beaten the Russians.'"

Flight Lieutenant L. E. Watson of the Royal Naval Air Service was killed on June 30 near Eastbourne, when his biplane became uncontrollable at a height of 1,000 feet and plunged to the earth.

A dramatic air duel in which a British aeroplane, reconnoitering over the Belgian town of Poelcappelle at a height of 4,000 feet, met and engaged a large German biplane which had double engines and propellers, is described by the eye witness at the British Army Headquarters in a narrative made public on June 28 by the Official Press Bureau. He writes:—

"The German machine first circled round ours, at the same time shooting a machine gun, but so far as known not inflicting any damage. Then our observer fired fifty rounds in return at a range of less than 200 yards. It had some effect, for the hostile biplane was seen to waver, and after more shots its engines stopped. The enemy aeroplane then dived to a level of 2,000 feet, where it again flattened its course, flying slowly and erratically."

"Under heavy anti-aircraft fire from below, our pilot turned toward our line to complete his reconnaissance. When his aeroplane was hit he decided to make for home, but the petrol tank had been pierced, and as the aeroplane glided downward on a slant the petrol was set alight by the exhaust and ran blazing down the front of the body of the aeroplane, which travelled on to the accompaniment of a rattle of musketry as the unused rounds of machine gun ammunition exploded in the heat and the pilot's loaded revolver was discharged."

"The pilot, however, did not lose control, and the aeroplane proceeded steadily on a downward course. Before it had reached the ground a large part of the framework had been destroyed. Even the hardwood blades of the propeller were so burned that the propeller ceased to revolve."

"When the machine finally landed back of our lines both officers had been severely burned, and the pilot, climbing out of the blazing wreck, tripped over a wire stay and sprained his ankle. The few serviceable portions of the aeroplane were then collected and removed under the shrapnel fire of the German guns."

The *Daily News*, referring to this fight, says:

"It has been known for some time past that the Germans were experimenting with newly constructed aeroplanes of a more powerful type than those generally in use by the various powers at the outbreak of the war. Such machines, whose distinctive feature is that they possess a multiple power plant, are by no means a novelty; indeed, several such have been in existence for some years past, the most noteworthy example of the type being the gigantic Sikorsky biplane, driven by four separate 100 horsepower engines and capable of accommodating a crew of a dozen men and lifting a useful load."

"This Russian machine, however, has not yet emerged from the experimental stage. Its great defect, inseparable from all load-carrying aeroplanes, is its low speed and slow climbing rate, which deprive it of the capacity for rapid manoeuvring. Latterly aeroplanes of the type described by the eyewitness have been under construction both in this country and France, and have given eminently satisfactory results. The details, of course, cannot be given; but this much may be said, that in the evolution of new machines we are in no way behind the Germans—rather, the contrary."

## Turkey

"A British aeroplane dropped three bombs on Smyrna, on June 30, inflicting over seventy casualties in the garrison," says a dispatch from the Mytilene correspondent of *"The Times."*

A successful British air raid on the Gallipoli Peninsula is reported by the *Daily Telegraph's* Bucharest correspondent. Nine seaplanes participated in the raid, dropping bombs on Akbaschi, the Turkish base in the harbor of Gallipoli, killing three soldiers and wounding a dozen others and severely damaging the storehouse and stores.



British troop ships being convoyed across the Channel by two airships (an Astra-Torres on starboard, a Parseval on port)  
Drawing by Algernon Black, courtesy of London Flight





# MODEL NEWS

Edited by WALTER H. PHIPPS



## CLUBS

**THE AERO SCIENCE CLUB OF AMERICA**  
29 West 39th Street, New York City

**PACIFIC NORTHWEST MODEL  
AERO CLUB**  
915 Ravenna Boulevard, Seattle, Wash.

**LONG ISLAND MODEL AERO CLUB**  
401 Grant Ave., Cypress Hills, L. I.

**BAY RIDGE MODEL CLUB**  
6730 Ridge Boulevard, Bay Ridge, Brooklyn

**DETROIT AERO RESEARCH AND  
MODEL CLUB**  
c/o William P. Dean, 1363 Townsend Ave.,  
Detroit, Mich.

**BUFFALO MODEL AERO CLUB**  
c/o Christian Weyand, 787 Delaware Ave.,  
Buffalo, N. Y.

**THE ILLINOIS MODEL AERO CLUB**  
Room 130, Auditorium Hotel, Chicago, Ill.

**TEXAS MODEL AERO CLUB**  
517 Navarro St., San Antonio, Texas

**HARLEM MODEL AERO CLUB**  
73 West 106th Street, New York City  
**MILWAUKEE MODEL AERO CLUB**  
402 Bradford Avenue, Milwaukee, Wisc.

**CONCORD MODEL CLUB**  
c/o Edward P. Warner, Concord, Mass.

**AERO CLUB OF ST. LOUIS**  
Columbia Bldg., 8th & Locust Sts.,  
St. Louis, Mo.

**MODEL AERO CLUB OF OXFORD**  
Oxford, Pa.

### Illinois Model Aero Club Notes

Sunday, June 27th, Mr. Dickinson, President of the Aero Club of Illinois, gave the model club a fine hydro picnic at his place on Lake Calumet. This was the second time that the club machines have risen from these waters. Mr. Dickinson, while he was about it, did the event up in style. More "eats" than could be consumed were distributed and the model members were even provided with swimming suits, sandals, etc. The model club owes the president of the Aero Club a debt larger than it can pay.

The I. M. A. C. desires to express its sincere co-operation and best wishes for the success of the National Model Aeroplane Contests and Villard trophy competition.

Miss Katherine Stinson has kindly decided to offer the model club a ride in her new biplane as prize for some future important model meet.

The news of the Villard series of national model meets was received by the members of the I. M. A. C. at its last meeting with great enthusiasm. It is felt that a movement in this direction is one that has long been needed to advance the work and interest of the country's model workers. Already members have commenced the construction of special models for this competition.

At the last meeting of the club a new committee was formed which takes over the special activities of arranging exhibition meets, originality contests, etc.

A schedule of meets for 1915 has been prepared and printed by the contest committee, and can be obtained for the asking. This schedule will be printed in *Aerial Age* in a forthcoming number.

Owing to the illness of certain members of the Milwaukee model club the contest with the latter has been postponed until August.

### Aero Science Club Bulletin

By G. A. Cavanagh

In consequence of a campaign on the part of the Club for new members five new members were enrolled at the last meeting and many applications received and many more are expected to be enrolled in view of the great activity on the part of the members. On Wednesday, July 7th, the publicity committee will meet and discuss matters pertaining to the campaign for new members.

The Harlem Model Aero Club, a new club which has lately been formed in New York City, has sent in a letter stating its intentions of participating in the Aero Club of America's series of Contests which are scheduled for the coming summer.

A large number of members of the A. S. C. are preparing to enter the elimination contest which is scheduled to be held at Garden City, August 1st, and from which contest four of the best flyers will be picked to fly in the first contest. All members who have not yet stated their intentions of entering this contest are requested to do so by informing the contest committee. Applications must be on hand before the meeting on July 24th.

Mr. Wallace Lauder, representing the Summit Model Aero Club was present at the last meeting and stated his Club's intention of flying in the coming contests. Mr. Wallace Lauder recently made an unofficial flight of 195 seconds' duration from the hand and will attempt to duplicate the feat sometime in the near future in the presence of representatives of the A. S. C.

For further particulars address the Secretary, Mr. G. A. Cavanagh, 29 West 39th St., New York City.

### Buffalo Model Aero Club

By W. J. Webster

The Buffalo Model Aero Club was organized on June 30th, 1915, with a membership of ten, and it was decided to maintain an open charter until August 1st.

The object of the club is to create an interest in, and encourage scientific model building, and to increase and diffuse a broader knowledge of aerodynamics.

Officers were elected as follows: Christian Weyand, President-Director, W. J. Webster, Secretary-Treasurer.

The first field meet will be held on Saturday, July 10th, on the Buffalo Aviation School grounds. The object of this meet will be to establish club records with R. O. G. and H. L. models considering distance and duration in each class.

During the month of August an aviation meet will be held in Buffalo under the auspices of the Buffalo Aero Club, and it is hoped and anticipated that there will be a trophy offered for the benefit of the model fliers.

For particulars communicate with W. J. Webster, Sec'y, 787 Delaware Avenue, Buffalo, N. Y.

### Detroit Aero Research and Model Club

A new aeronautical research and model club has been organized in Detroit by Mr. William P. Dean, the well-known English model flier who has done so much for the advancement of model experimenting and flying in this country.

The object of the club, which is to be run under the personal supervision of Mr. Dean, is to encourage scientific model building and promote increased interest in aeronautics.

The officers of the club are as follows:—William P. Dean, Secretary and Instructor; Major Mackenson, Asst. Secretary; Marvin Blumenthal, Treasurer. Committee—Sterling C. Bell, Major Mackenson, Howard Mayer, Marvin Blumenthal, Douglas Threlkeld.

On June 30th, Mr. Dean gave a demonstration of Model flying to members on Palmer Park Golf Grounds, with three different types, each 33 inches long. Respective durations obtained, 33 sec., 35 sec., and 45 sec. Witnessed by Major Mackenson and Marvin Blumenthal.

### The Loudy Flying Boat

The following is a description of a flying boat which is being built by Mr. A. Loudy after tests made with the model shown in the accompanying photograph. Mr. David Bavly who sends us the description states:—

"The hull as may be noticed is a distinct innovation. It is so designed that the machine will get off the water after a very short run, the tests showing that the machine will plane at 18 m.p.h. while the tests carried out at Washington on other flying boat hulls, gave 24 m.p.h. as the planing speed. The shape of the hull does not allow any spray to be thrown out from the sides, all the energy used in making spray is thus absorbed in lifting the hull. This also obviates the danger of the passengers getting wet. After the power has been cut off and the boat strikes the water it comes to a dead stop in a distance of about 100 feet. The shape of the hull also prevents pounding on a rough day and when landing. It also has considerable lift when the machine is travelling in the air. The machine although designed for four passengers will carry five. It has dual control. The two pilots sitting in the front seat. The steering wheel is used for the direction rudder, and the usual fore-and-aft motion for the elevator. The ailerons are unique, as you will notice if you examine the photo carefully. Only one aileron works at a time. The aileron is slotted, and when raised not only depresses the wing but drags it behind thus causing the machine to circle into a gust or sudden change of the direction of the wind. This does not necessitate the use of the direction rudder and it is stated thus gets around the Wright patents. The ailerons are operated by two independent foot-pedals. This arrangement is also advantageous when landing in a restricted space, as by pressing both pedals the two ailerons are forced up and thus act as an air brake. The tail of the hull is watertight and has a buoyancy of 3,000 lbs. The weight of the machine loaded ready for flight will be 2,000 lbs. It will have a speed range of 40-70 m.p.h."



Mr. A. Loudy and the novel flying boat model which he has constructed





Aeronitis is a pleasant, a decidedly infectious ailment, which makes its victims "flighty," mentally and physically. At times it has a pathologic, at times merely a psychologic foundation. It already has affected thousands; it will get the rest of the world in time. Its symptoms vary in each case and each victim has a different story to tell. When you finish this column **you** may be infected, and may have a story all of your own. If so, your contribution will be welcomed by your fellow **aeronuts**. Initials of contributor will be printed when requested.

#### The Trustful Aviator

The Rev. R. J. Campbell, the English exponent of the new theology, was talking to a Philadelphia reporter about politics.

"Modern politics," he said, "are worse than modern business. You, here in the States, are so used to political corruption that you joke about it.

"I heard a joke about it on the boat. An aviator—the joke ran—descended in a field and said to a rather well dressed individual:

"Here, mind my machine a minute, will you?"

"What?" the well dressed individual snarled. "Me mind your machine? Why, I'm a United States Senator!"

"Well, what of it?" said the aviator. "I'll trust you."

H. S. V.

#### One Advantage

"Traded your motorboat for an aeroplane, eh? What's the idea?"

"Well, there's this about an aeroplane—even if the engine does break down, you're bound to land somewhere."

#### Easiest Way

Teacher—How will they use airships in war, Jimmy?

Jimmy—Induce the enemy to go up in 'em, ma'am.

#### HIS CRITICISM.



ARTIST—Don't you think I have painted those angels' wings well, old man?

AVIATOR—Oh, yes—but, say, they ain't practical!

(Courtesy N. Y. World)

#### Not the Material

"I wish this aviation magazine would stick to facts."

"Then get them to print it on fly paper."

#### What Is Humor?

The *N. Y. World* in its endeavor to help mankind in the struggle to reach its goal has, among other things, undertaken to get a definition of Humor. It gives the reasons for wanting new definitions and the results as follows:

At a recent dinner given in New York to Irvin S. Cobb, humorist and war correspondent, Martin H. Glynn, former Governor of New York, in a witty speech thus expressed himself:

"Humor is the enjoyment of the imperfect. Humor is an appreciation of the elusive and the unexpected. Humor is a collision of two ideas marching in the opposite direction."

Some captious critic pointed out that these epigrams were not original with Mr. Glynn. Samuel McChord Crothers, in "The Gentle Reader," published in 1903, having written on page 71 that "Humor is impossible to the man of one idea. There must be at least two ideas moving in opposite directions so that there may be a collision," and on page 68, "Humor is the frank enjoyment of the imperfect."

Need for new definitions of humor being thus demonstrated, some of America's leading humorous writers were asked for their definitions of humor. Here they are:

"Humor is best defined as a certain indefinable something.

"Trying to define it inevitably results in falling downstairs; one goes bumpity-bump from definition to definition, and sprawls at the bottom with the eggs broken."—RUPERT HUGHES, Novelist and Playwright.

"Humor is a jewel of the imagination worn on the tip of the tongue. It is usually borrowed."—ROBERT H. DAVIS, Editor of *Munsey's*.

"The best definition of humor is to get a good, wholesome laugh. The psychology of it I cannot dissect. It is purely temperamental, and it depends a good deal on the spirit of the moment. If the audience laughs, I think it is funny. If it doesn't, it is cremated."—DEWOLF HOPPER, Comedian.

"Humor (I think) is such an exposition of a relation between things hitherto considered incongruous as to provoke amusement. Humor may exist in the soul of the thought or the body of the phrase. Wit is inseparable from the latter—the form."—WILTON LACKAYE, Actor.

"Humor is something without which Heaven would be Hell.

"Humor is the realization of the fatuity of human endeavor."—J. MONTGOMERY FLAGG, Artist.

"Humor is a happy misfit in the eternal fitness of things."—CAROLYN WELLS, Poet and Writer.

SETH LOW "is inclined to define humor as a request to define what it is under the pressure of the Constitutional Convention."—(Sent by his secretary).

"Humor is the art of incongruous combination and contrast. It is a combination of intellectual chemicals calculated to cause an explosion—with malice aforethought. The explosion is called laughter. The louder the report the broader the humor. Or we might call it an effervescence grading in violence from the Vesuvian eruptions of Bill Nye to the delicate champagne of Meredith."—WALLACE IRWIN, Fiction Writer.

"Humor is a harmless departure from the unusual.

"Humor is a conception of a primitive people, who were forced upon their own resources for amusement and diversion.

"In cities and in the culture of civilization we lose our sense of humor or sense of the ridiculous, which is the same."—DAVID GIBSON, Editor *Gibson's Magazine*.

"Humor is the heart's joy in the perception of the incongruous. Its appeal is deeper than that of wit, which is purely intellectual. It is emotional sunshine illuminating and transforming the commonplaces of life. It is the lightning revelation of truth by a sudden change of perspective, showing things out of proportion, but somehow showing them more truly."—HELENA SMITH DAYTON, Artist and Writer.

"Humor is the accident of an intellectual parentage, the illegitimate child of Fancy, born out of Imagination, nursed by Sorrow and brought up by hand by Personality."—THOMAS L. MASSON, Humorist.

"The humor that most appeals to me is the exaggerated depiction, without malice, of the frailties of human nature, whether in one's self or in others, as in the writings of Cobb or N. L. Wilson and the acting of Bert Williams or Willie Collier."—RING W. LARDNER, Humorist.

"Humor is sentimental anarchy. That's as near as I can come to it.

"P. S. So is grief."—R. DIRKS, Comic Artist.

"Humor is something the attempt to define which, at public dinners, gets you home two hours later."—FRANKLIN P. ADAMS, Column Conductor.

If it were not so tragic we should say that an exceptional expression of Humor is the Navy's statement that it will wait to order aeroplanes in large number until it can get perfect aircraft, and its expectation to secure enough equipment in case of war by commandeering the aeroplanes owned by civilians.



(Continued from page 402)

## PUGET SOUND AERIAL NEWS

By Robt. La Tour

Aviator Strommer has been kept busy carrying passengers in his flying boat at Point Defiance Park in Tacoma.

Herbert Munter, Seattle's young aviator, is still doing his stunts in Seattle. While flying over Harbor Island recently he met with a slight accident to his machine, which, however, did little damage. He was up about 300 ft. when he threw his propeller, and although his machine is a "pusher" the propeller flew off without doing any damage to the outriggers. Munter made a graceful glide and an easy landing, but the propeller did not fair the same.

The Hamilton Aero Mfg. Co., of Seattle, have a large force at work rushing out a speedy tractor biplane. Although the builders have not disclosed the purchasers it is believed it will see service in Canada.

T. T. Maroney, the Montana aviator, but now making Everett, Washington, his headquarters, had the misfortune of blowing out the engine of his handsome new flying boat recently. A new Curtiss O. X. is being rushed to him. All of his exhibition dates will be fulfilled.

The De Lloyd Thompson, Barney Oldfield team did their stunts in connection with the auto races at Tacoma, July 2nd, 3rd, 4th and 5th.

## CICERO NEWS

By Joseph J. Lucas

Friday last was a very windy day but it calmed down during the evening and Mr. Curtiss La Q. Day took out his new Benoist Tractor Biplane and made a fifteen minutes' flight.

Saturday, Mr. Wiener had out the Hensel Stabilizer Wright biplane and took up Mr. Charles Dickinson, president of the Aero Club of Illinois, as a passenger.

Sunday, the weather was fine. Mr. Castori tested out Miss Katherine Stinson's tractor loop-the-loop machine built by Partridge-Keller Aeroplane Co. Mr. Castori also took up the P. L. Tractor Biplane. Mr. Hartman who is running a Curtiss biplane and Mr. Prichard, a Newport Monoplane, did some hopping.

Monday, Miss Katherine Stinson took out her new Biplane and did some rolling.

Tuesday, Miss Katherine Stinson had out her Tractor Biplane and made four fine flights, varying from 500 to 2,000 feet. Mr. Wiener took out the Hensel Stabilizer Wright Biplane and went out for a joy ride; while he was up 500 feet he let loose of the control and held his hands high above his head and let the machine automatically control itself for over a mile. Mr. Wiener has not flown for over two years and was a pupil of Max Lillie. At the rate he is going, he will prove to be one of the best flyers in the country.

Mr. Castori made two flights with the P. L. Tractor Biplane. Mr. Hartman and Prichard were out making hops.

Mr. Partridge expects to be out with his Tractor machine next Sunday in good shape.

Mr. Harry Wells and Emil Laird of the Illinois Model Aero Club will be out with their new machines the early part of next week.

## CALIFORNIA NEWS

Charles F. Willard, who has been designer and engineer for the Glenn L. Martin Company for two years, has resigned to take a similar position with the Curtiss Aeroplane Company. Willard began his public flying in 1909 as a Curtiss aviator, but after the Los Angeles aviation meets decided to make his home in California.

Silas Christofferson, whose San Francisco factory is busy filling orders for the Mexican government, is building a six-cylinder aviation motor. Christofferson plans a non-stop flight between the San Francisco and San Diego expositions in the near future.

The Glenn L. Martin factory is turning out two military hydro-aeroplanes for use by Dutch army officers in Java.

Floyd Smith, of Los Angeles, is looping the loop with a Martin tractor at the Griffith aviation field near Burbank, Cal.

Harry Christofferson is making daily flights to carry passengers from the ocean beach at San Francisco. He frequently carries fifteen to twenty passengers a day.

Earl Daugherty, who is flying at Long Beach, is making an effort to induce the citizens of that town to establish a public aeroplane hangar. Long Beach is a frequent terminus of the army aviators' flights from San Diego.

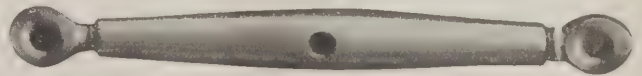
Augustus Post, who is visiting the Panama-Pacific exposition at San Francisco, has undertaken the organization of "Aerial Navigation Day" at the exposition. Tuesday, July 13, has been officially designated as "Aerial Navigation Day" on the Exposition calendar and a special program is being prepared.

## Sturtevant News

The B. F. Sturtevant Co. have found that their present facilities for the testing of their gasoline motors is inadequate, owing to the large volume of orders which are being filled for their eight-cylinder 140 h.p. aeronautical motor and consequently work is being carried on day and night in the erection of a new test plant. This building when completed will be devoted exclusively to the testing of the aeronautical motors.

The work is being carried on under the personal supervision of Mr. Noble Foss, designer of the eight-cylinder motor, and Mr. Channinghouse, an expert in charge of the testing of the motors. The equipment will consist of the most improved and up-to-date machines including several large stands provided with calibrated moulinsets. Nothing will be lacking in order to determine the oil and gasoline consumption, the brake horsepower and other tests with the greatest precision.

The new plant will be in full operation within a week.



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Offering Least Resistance

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18 & 20 Dunham Place

Brooklyn, N. Y.

## Military Aeroplanes

An Explanatory Consideration of their Characteristics,  
Performances, Construction, Maintenance and  
Operation, for the Use of Aviators

By

**GROVER C. LOENING, B. Sc., A. M., C. E.**  
Aeronautical Engineer, U. S. Army

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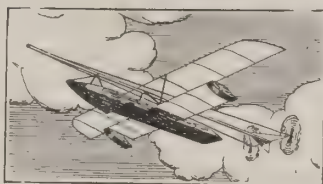
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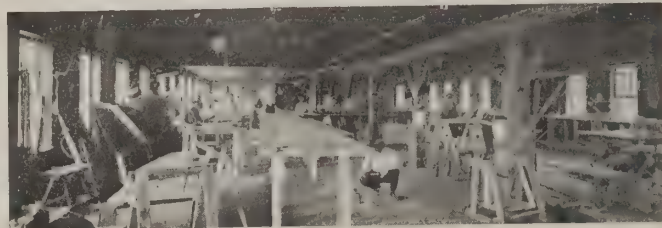


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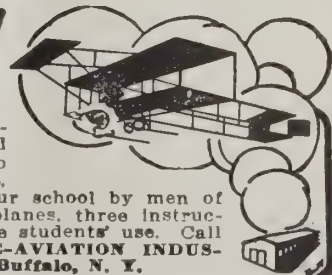
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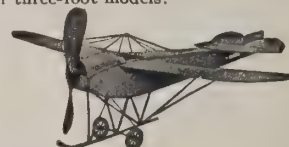
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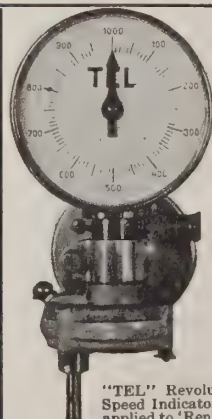


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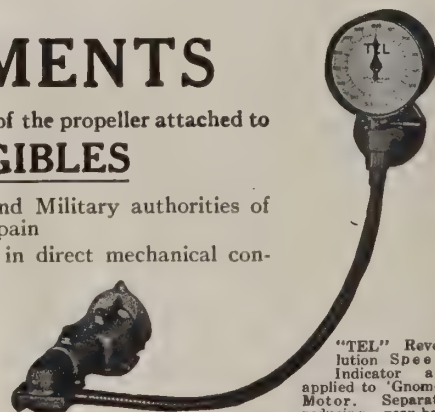
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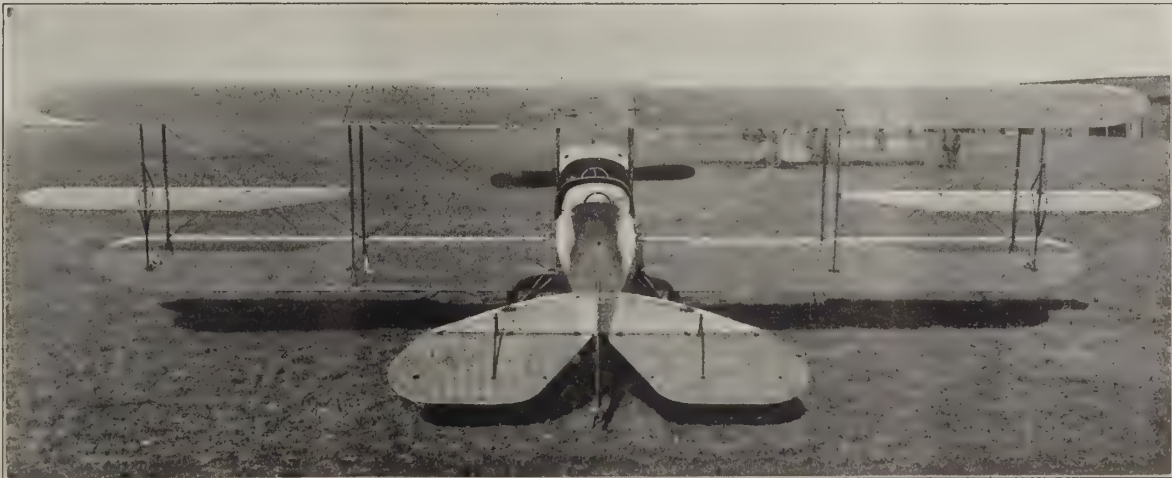
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PUBLISHED WEEKLY BY THE AERIAL AGE COMPANY, Inc., 116 West 32nd Street, New York City

*Entered as Second-Class Matter March 25, 1915, at the Post Office at New York, N. Y., under the Act of March 3, 1879*

VOL. I.

NEW YORK, July 19, 1915

No. 18

## Building the U. S. Navy Air Fleet—Navy to Order 20 Machines Immediately and Recommend Appropriation for 200 More

A WASHINGTON report, as we go to press, announces that the urgent necessity for an adequate aerial fleet in the navy will result in the General Board of the Navy recommending the construction of a fleet of 200 aeroplanes. Mr. Daniels, Secretary of the Navy, it is added, will make the General Board's recommendation his own and there is an excellent chance that Congress, acting upon the recommendation of the Secretary, will appropriate for this number of aircraft or for more.

At the second meeting of the new Advisory Council of the Navy the need of aeroplanes and aviators was discussed and it was agreed that the first step should be the acquisition of fifteen or twenty more hydro-aeroplanes and flying boats.

This is the first step of the Navy towards building an air fleet, a step which will meet with the approval of the entire country.

The present aeronautical equipment of the Navy consists of only three hydroaeroplanes and two flying boats in commission, five hydroaeroplanes ordered, and a small, training dirigible ordered. There are twelve officers either holding or about to get their pilot certificates, and a class of ten officers about to take up the course of training—which requires between three and six months.

The present equipment alone would probably not be sufficient to meet contingencies which have in the past three years depleted the air service, so that it never was possible to train a new class fast enough to be added to the preceding class. Instead, each new class usually only replaced the preceding class—the members of which usually were transferred to other branches of the Navy, or got married, or were taken away by other causes. As a result we have, after four years, less personnel and equipment available than is required to form a single squadron. The addition of the new class of ten, and another class to be formed shortly, and the ordering of twenty more aeroplanes will prevent another total depletion.

The addition of twenty machines will afford a good start. Some of these machines will be needed quickly, to supply the officers who are training. As matters stand only the three hydroaeroplanes can be used for training and a dozen officers wait daily on the Pensacola Beach waiting for the opportunity to get a few minutes of training.

As most of the officers are newly trained and the first need is for scouts, the aeroplanes to be acquired will have to be of the average type—the type which is, by the way, used in large numbers by the warring

nations. There being no special requirements of unusual severity to be met, these machines can be supplied immediately by our constructors who, while pressed by large orders to be filled or about to be placed for foreign countries, may be relied upon to give immediate attention to the Navy's order.

The country will await with interest for the announcement of the formation of a new class, a class of at least twenty officers, which cannot come too soon. In fact, the country will only feel relieved and assured that proper consideration is given to aeronautics when this class is formed and several additional aeronautical centers are established.

The following letter sent to the Secretary of the Navy by the Governors of the Aero Club of America fully explains the need of more aviation centers and the general approval of the Navy's progress in aeronautics:

The Honorable Josephus Daniels,  
Secretary of the Navy,  
Washington, D. C.

My dear Mr. Daniels:—

The Governors of the Aero Club of America learn with much satisfaction that the Navy plans to form an air fleet of 200 aeroplanes, and that at the meeting of the Advisory Board of the Navy it was decided to immediately order twenty hydroaeroplanes and flying boats. Also that a new class of officers is taking up the course of training at the Pensacola Naval Aviation Training School, and an additional class of officers is to be formed shortly—also to take up aviation.

The Governors have also noted with much satisfaction the substantial increase in the number of officers who hold the "expert aviator" certificate. Twelve Navy officers, eight of whom are actively connected with the naval aeronautical organization, hold the "expert aviator" certificate.

The addition of twenty machines is a good start toward building a substantial aeronautical organization and establishing a foundation for such an organization substantial enough to prevent a total depletion of the aeronautical section of the Navy, through the transfer of officers to other branches; the marriage of officers, and other causes, as has been the case annually in the past three years.

The most immediate need now is for additional aviation centers to guard against the possibility of the entire aeronautical equipment of the Navy being destroyed by fire, storm, or other causes, as might happen if the entire equipment is kept in one place, as it is at present.

The Board of Governors, therefore, after having given the matter thorough consideration, respectfully urges the establishment of other aeronautical divisions at important naval centers.

The need for aeroplanes at important points along the coasts, to keep the authorities acquainted with the happenings off the coasts, adds reasons for establishing more aviation centers.

These centers would also facilitate the training of officers for the Naval Militia, who may wish to avail themselves of the offer made recently by the Navy Department, but who may not be able to spare the time necessary to go to Pensacola for the training.

The Board of Governors of the Aero Club of America feels certain that the extension of the aeronautical service in this way will meet with public approval. The country at large realizes



the necessity and value of a substantial aeronautical organization, and favors prompt action in building it, as has been shown by the hearty editorial endorsements of the policy outlined and urged by you in your recent address at Newport.

Since sending you our recent letter urging that the Navy Department hold a motor competition with \$150,000 in prizes and orders, we have been advised that four additional concerns are developing aeronautical motors. These firms are:

Glenn L. Martin, Los Angeles, Cal.  
Thomas Brothers, Ithaca, N. Y.  
Silas Christofferson, San Francisco, Cal.  
Bournville Motor Makers, New York.

This makes a total of twenty-eight firms that are building, or planning to build, aeronautical motors, and emphasizes the necessity of holding a contest to bring out the best.

With assurances of appreciation for the progress made in the building of an air fleet, and with the best wishes for complete success, we remain

Yours very sincerely,  
THE AERO CLUB OF AMERICA,  
Alan R. Hawley,  
President.

### England Needs 3,000 More Aeroplanes But Cannot Train Pilots Fast Enough

A member of the House of Commons inquired of Mr. Tennant, the Under-Secretary for War, regarding the possibilities of getting the 3,000 more aeroplanes needed in the coming six months, above what has been ordered and what is at hand. Mr. Tennant replied that it would do no good to order more than what was being ordered, as the training of pilots required time and care.

The records show that 1,400 pilot licenses have been issued by the Royal Aero Club. Possibly 250 other aviators in the British service have received their certificates in other countries, and 150 of the aviators who received their certificates in the years 1910-1913 may have retired. That would leave 1,500 aviators in or available for the British air service.

According to a statement made by Mr. Tennant on June 16th, on the date of the mobilization, Great Britain had only one government training school for aviators, the Central Flying School, which "was able to train twenty pupils," and now there are eleven such schools, "which are able to train upwards of 200 pupils."

### Twenty-Eight Makes of Motors for the \$150,000 U. S. Navy Motor Competition

The idea of holding an aeroplane motor competition, with \$150,000 in orders and prizes, urged to the U. S. Navy Department by the Aero Club of America is meeting, as was to be expected, with general approval.

If held within three months there would be at least 25 makes of motors represented, for there are 28 names to the list of firms sent by the Club to Secretary Daniels. The list is as follows:

Aeromarine Plane and Motor Co., Nutley, N. J.  
Ashmusen Co., Woonsocket, R. I.  
Burgess Co., Marblehead, Mass.  
Bournville Motor Makers, New York City.  
City Engineering Co., Dayton, O.  
Cooper Air Craft Co., Bridgeport, Conn.  
Curtiss Motor Co., Hammondsport, N. Y.  
Duesenberg Motor Co., St. Paul, Minn.  
Glenn L. Martin, Los Angeles, California.  
Grinnell Aeroplane Co., Grinnell, Iowa.  
Gyro Motor Co., Washington, D. C.  
Hall-Scott Motor Co., San Francisco, Cal.  
Harriman Motors Co., St. Glastonbury, Conn.  
Herfurth Engine Co., Alexandria, Va.  
Johnson Brothers, Terre Haute, Ind.  
Kemp Machine Works, Muncie, Ind.  
Macomber Motor Co., Los Angeles, Cal.  
Maximotor Makers, Detroit, Mich.  
Packard Motor Car Co., Detroit, Mich.

Polyplane Motor and Metal Mfg. Co., St. Louis, Mo.  
Roberts Motor Co., Sandusky, O.  
Silas Christofferson, San Francisco, California.  
Sterling Engine Co., Buffalo, N. Y.  
B. F. Sturtevant Co., Boston, Mass.  
Thomas Brothers Aeroplane Co., Ithaca, N. Y.  
Van Blerck Motor Co., Monroe, Mich.  
Wells-Adams Motor Co., Rochester, N. Y.  
The Wright Co., Dayton, O.

As pointed out in the letter, to bring the desired results, the Competition must offer substantial awards in orders and prizes, at least \$150,000 in all, and the contest should be for the best showing on a run of up to ten hours. As very aptly put in the letter, "good engineers and motor builders, who have, at large cost, partially developed aero motors, are in great demand for many purposes, and whereas developing aero motors is an expensive process, to insure success it is essential that the awards in orders and prizes offered be sufficient to justify builders in entering the competition as a business proposition."

### Secretary Daniels Talks Sensibly

Editorial in New York Sun

The address delivered by Secretary Daniels at the War College in Newport yesterday is encouraging. It justifies the belief that the doctrine of preparedness has found hospitable lodgement in official minds. We may even hope that there will be no opposition based on false ideals or mushy sentiment to the serious proposals of informed men who advocate the creation of an adequate defensive establishment for the protection of our coasts.

In particular, the Secretary spoke of the lessons to be learned by this country from the amazing progress that underwater and aerial craft have made. The significance of his reference to the English navy is enforced by his pledge that the Department will keep an open mind for every suggestion of improvement that may be brought to it. His speech amounted in fact both to an invitation and a pledge.

When the service does lay its facts before Congress, as Mr. Daniels urges, its presentation will have the support of the powerful influence of the civilian administrators.

Mr. Daniels has not always appeared to advantage in the discussion of naval affairs. Yesterday, however, he struck the note the whole country has waited to hear. In his declaration for a powerful fleet, fully equipped for modern war in all its phases, Josephus Daniels spoke as a Secretary of the United States Navy ought to speak.

### Last Week's Subscribers to National Aeroplane Fund

James Deering.....	\$100.00
Felix M. Warburg, New York City.....	100.00
Mrs. F. M. Whitehouse, Crowhurst, Mass.....	25.00
Mr. G. I. Scott, New York City.....	25.00
O. J. Gude, New York City.....	25.00
Wm. C. Muschenheim, Hotel Astor, New York City.....	25.00
Mrs. A. Murray Young, New York City.....	25.00
Phillip H. McMillan, Detroit, Mich.....	25.00
Mr. Frederic C. Thomas, New York City.....	15.00
Alfred T. Stanley, New York City.....	10.00
Randolph Stalnaker, B. and O. R. R., Wheeling, W. Va.....	10.00
George J. Dyer, Norfolk, Conn.....	10.00
Miss Margaret H. Garrard, Bellport, L. I.....	10.00
H. C. Bullard, New York City.....	10.00
William T. Weitling.....	10.00
Previously Acknowledged.....	8,619.00



# THE NEWS OF THE WEEK

## Two Monster Curtiss Flying Boats Ordered by Russia

The Russian Government has ordered two monster aeroplanes of the flying boat type for its navy, to be built at Buffalo, N. Y., by the Curtiss Aeroplane Company. If these machines are satisfactory, it is understood that the Russian Government will be in the market for several more.

The new flying boats will be ready for shipment late in August. They are designed to carry a useful load of 3,000 pounds, consisting of bombs, a machine gun and fuel.

Nearly all of the countries at war with Germany are now demanding aeroplanes capable of carrying great loads of explosives for offensive work. When Lieut. John Cyril Porte, who was to fly across the Atlantic for Rodman Wanamaker, returned to England at the beginning of the war he at once induced the British Admiralty to buy the trans-atlantic flying boat, *America*, which had been built for the over ocean trip. Up to the present time Great Britain has ordered thirty-two flying boats, patterned after the Wanamaker machine. Twelve of these have already been shipped.

The success of these machines in the British aeroplane raids induce the Italian navy heads to order four of them, and now the Russian Government is demanding a still more powerful machine.

Russia's new flying boats will be of the *America* size, but where the total horsepower of the *America* was about 168 with two motors the total horsepower of these new flying boats for Russia will be 320 with two motors. The hull will be different in design from the *America's* hull and will be specially arranged for mounting a gun, for carrying bombs and for observing the enemy's positions.

The speed of the new machines will be about eighty miles an hour. The speed of the *America* was sixty-five miles an hour.

The very large useful load to be carried by the new machines is made possible by increasing the camber of the planes.

When the new aerial destroyers are ready they will be shipped to Vladivostok, where Charles C. Witmer is in charge of the testing of Curtiss aeroplanes for the Russian Government.

## Miss Ruth Law Flies at Dayton

Despite lowering skies, that threatened to open their flood gates at any moment, a very successful afternoon's exhibition was given at the fair grounds at Dayton recently, for the benefit of the auxiliary of the local mail carriers' association. Owing to the fact that Katherine Stinson was unable to secure a satisfactory machine from the Wright Brothers, following her inability to secure her own from Chicago, she did not give the exhibition flight arranged for. Luckily, however, Ruth Law, the well-known aviatrix, of New York City, was in Dayton with a Wright biplane, and she agreed to substitute for Miss Stinson. A very satisfactory flight was given by Miss Law.

## Army Testing Aerial Range Finders Aided by A. Leo Stevens

Officers of the United States Army began last week at Tobyhanna, Pa., to test the use of aerial range finders and observers of artillery fire. Captive balloons are being employed for this purpose.

Army men regret the lack of at least one of the modern kite or dragon balloons employed by the French and German armies to great advantage. They have several of the older type of spherical aerostate, each of about 19,000 cubic feet gas capacity, and constructed to lift two or three men. These were used in the manoeuvres on the Texas border a few years ago.

To obtain the best practical advice, the War Department has engaged the services of A. Leo Stevens, of New York City, the well-known balloonist, as instructor and demonstrator. It is expected that several balloon squads will be developed in both the regular and militia organizations as a result of the training at Tobyhanna, which will continue until September.

The captive balloons ascend to a height of 1,500 to 2,000 feet, controlled by a windlass operated by a gasoline motor. Recently the Allies, as well as the Germans, have been reported as substituting these balloons for aeroplanes in range finding whenever the enemy is not too well concealed, and also for observing the effect of shell and shrapnel fire. It has been found necessary, however, to protect the balloons by aeroplanes against the attacks of other aeroplanes. Advantage is found in that the balloons form a comparatively motionless platform for measuring ranges, while the aeroplane is in constant swift movement.

Of twenty-five batteries of militia in the various Atlantic Coast States assigned to Tobyhanna for instruction by the regular officers, twelve, or nearly half, are part of the National Guard of New York State, forming two full regiments. Captain Daniel W. Hand, of the Fifth United States Field Artillery, is assigned as inspector instructor of the New York and New Jersey batteries, with Lieutenants Dawson Ormstead and Harry Pfeil. Captain Marlborough Churchill is instructor to the guardsmen of Pennsylvania, District of Columbia and Virginia. Captain Robert Davis instructs the New England men in gunnery.

In practice, each battery is assigned to a battery of regulars, which aids in the lessons, spending about ten days in the course. In this time the militia battery is allowed to fire from 150 to 300 rounds of ammunition from the United States service field gun. Much of it is shrapnel, each projectile weighing about fifteen pounds, and scattering more than 250 missiles on bursting.

In view of the effectiveness of the high explosive shell in trench warfare, supplanting the shrapnel, many of the officers and men who are to take the course are hoping that they will have an opportunity for practice with this ammunition.

A group of enthusiasts taken at San Diego, Cal. From left to right, George Hallett, Raymund V. Morris, Katherine Stinson, Lieut. R. A. B. Sutton, Lieut. Jose Morrow, Lieut. Bown, Lieut. Walter R. Taliaferro.







The test of the 90 h.p. Gyro-Duplex, in a two hours' non-stop run it gave 80 brake horsepower at 1250 R.P.M.

#### Brookins for Big Aeroplane Fleet

According to an interview which appeared in the Dayton News of June 21st, Walter R. Brookins, the famous Wright pilot, is quoted as saying:—

"It will not be long before aeroplanes can be bought for \$2,500 and even less. The air is the natural highway of the world," declared Brookins. "It will be but a few years until the air will be so full of craft that nobody will notice them. People will ride around the world in aeroplanes, and machines equipped with automatic stabilizers will be within the reach of the average citizen. They will be less expensive and more durable than automobiles."

Brookins declared "that all that was needed for this development in aviation is a proper recognition and support of the science of aviation by the government. If the government would adjudicate its patents, make appropriations for landing places and chart them, and spend just a small portion of the money it now spends on highways upon aviation, the use of the aerial highway would soon follow." Most people do not appreciate the gravity of the fact that the United States could not command six efficient aeroplanes to-day if it were suddenly launched in a war. The United States appropriates \$300,000 for aviation. European countries appropriate millions and millions. Our machines are recognized and approved in Europe usually before the United States adopts them.

#### U. S. S. Essex, Ohio Naval Militia Organizes Aeronautical Section

The U. S. S. *Essex*, Ohio Naval Militia, Toledo, Ohio, has organized an Aeronautic Section, and enrolled two of the country's most noted aviators as aviation officers, namely Horace Corbin and Victor Carlstrom.

Mr. Corbin has taken a great interest in the organization of an aeronautical corps in connection with the Naval Militia, and after noting the recent instructions from the Division of Naval Militia Affairs, received by Commander Anthony F. Nicklett, Commanding the U. S. S. *Essex*, that the Secretary of the Navy had approved the establishment of an aeronautic corps and the Navy Department would loan the various Naval Militia Organizations, aeroplanes and send their officers and men, enrolled for aeronautic duty, to an aeronautic station of the Navy or an aeronautic ship for a course of instruction during a period of each year, he came forward and offered his services, bringing with him, Mr. Carlstrom and a staff of mechanics sufficient to organize a section. Mr. Corbin also donated the use of one of his aeroplanes for the coming summer cruise of the *Essex*, with the hope that the Navy Department will see the interest really taken in this branch by himself and the others who have enrolled, and will make the *Essex* one of the first ships or organizations to receive an aeroplane from the government.

Toledo has been prominent for its aeronautical activities and is the home of some of the representative aviators this country has produced. The interest in aeronautics in Toledo is very marked and the material for the organization of two sections, making an aeronautic division, is available.

Mr. Corbin, having been asked what his views were on the advantages and facilities as regards a station for naval aeronautics on the Great Lakes for an instruction camp, states that he believes Toledo to be an ideal location, with its twenty-five square miles of sheltered bay and river mouth, on which aviators have the best possible protection for student flights, and especially its aviation field at Bay View Park, which lies directly south of the harbor. This field, having an area of nearly a square mile and belonging to the city of Toledo, could be easily secured for a field for instruction and practice, and it should be made the training camp for the various Naval Militia Aviation Corps on the Great Lakes.

The Ohio Naval Militia can feel very fortunate in getting the services of Mr. Corbin. He will prove a valuable asset to the Toledo organization as well as to the Naval Service in general.

#### Wright Flying Boat Hits Log in Hudson

The flying boat trip from New York to Albany which Edwin A. Morse, son of Charles W. Morse, and A. B. Gaines intended making in the new Wright flying boat on July 11th came to an untimely end. Hardly had Gaines and his passenger started on the flight before they were forced to descend. As the machine touched the water its bow struck a log causing the machine to turn turtle and pitching both occupants in the water. Gaines climbed out from under the wreckage and caught hold of the body of the machine. As soon as he saw that Gaines was safe Morse started to swim for the shore.

In the meantime several launches headed for the wreck. One of them picked up Morse. A launch took the machine in tow and dragged it back to the hangar in the pier basin at the foot of 132d Street.

It was badly damaged and will be sent back to Dayton for repair, which will probably take at least 3 weeks or a month.



Test of the Thomas Military Tractor before the purchasing agents of the British Government. This picture illustrates the splendid field facilities of the Thomas plant



### Texas School of Aviation Holds Exhibition

At Dallas, on July 5th, the Texas School of Aviation gave a demonstration of flying. Lester Miller in charge of the aeroplane division of the school had out the biplane while O. C. Hair made a balloon ascension. It is intended to keep up these weekly demonstrations until the formal opening of the school which has been postponed until the latter part of July.

### Donald W. Douglas Joins Glenn L. Martin

Mr. Donald W. Douglas has accepted a position as chief engineer with the Glenn L. Martin Co. in Los Angeles. Having graduated in mechanical engineering at the Mass. Inst. of Technology, Mr. Douglas was made assistant to Lieut. J. C. Hunsaker in the wind tunnel in Boston. He served in this capacity during the past year and hopes now to supplement his theoretical knowledge of aerodynamics with the thorough practical experience that may be gained with such a company as that in Los Angeles.

### Military Aviation News

Seven new Curtiss machines arrived at the School on June 21, which with the one already on hand for official test, will constitute the aircraft of the 1st Aero Squadron. On the same day two Martin machines of the latest type were delivered to the School for test, prior to acceptance by the Signal Corps. These machines show the steady and certain progress of construction toward greater refinement in workmanship, finish and materials. The standardization of certain parts, such as the landing chassis, arrangement, arrangement of motor, system of controls, disposition of seats, instruments, etc., is clearly sought in the present types of aeroplanes; a promise of general uniformity of constructional features that will inevitably bring safer, stronger, more comfortable and more efficient machines.

The present squadron of Curtiss machines are distinguished by the low rakish lines, an effect produced by staggered planes. The fuselage is long, unusually deep and narrow. The nose of the fuselage is a metal surface, enamelled a pale tan drab, the body and wings being covered with a white waterproofing "dope." The machines are equipped with instrument boards. The passenger seat is a wicker basket chair. Something untried at this station heretofore, will be provided in the shape of a celluloid windshield to protect the pilot's head from the blast of the propeller. The new Martin machines are distinctive by the round, graceful sweep of the wings, the long tapering torpedo-shaped body, with a round nose radiator and a four-wheel chassis. The two small front wheels are elevated, so that they are brought into use only when a landing is made in soft ground, tending to nose the machine over. The metal hood is enamelled an olive-green and all surfaces are of an olive drab color. At the present time the Curtiss type of machine is being used for service duty, the Martin type for training work. A Curtiss Flying Boat is used in the first stages of instruction for beginners.

With the beginning of the new fiscal year, the annual appropriation of \$300,000 became available. The School has grown with such leaps and bounds during the past year, that it has completely passed the formative period. There are now ten large buildings on North Island besides numerous sheds and small structures. The large buildings consist of four hangars, with 24 individual booths or stalls, for land machines, two water hangars, a machine shop, a fireproof storehouse, power house, experimental station, construction shop, barracks, officer's mess and headquarters. During the past year, the first field unit has been organized. The First Aero Squadron will leave this station during



Mr. O. A. Solbrig, of Davenport, Iowa

the latter part of July and take station at Fort Sill, where it will remain until the completion of barracks, quarters and the other necessary buildings at Fort Sam Houston, Texas.

During the stay at Fort Sill, the Squadron will co-operate with the Field Artillery School in the development of a reliable system of "spotting" and fire control from aeroplanes. The officers constituting this squadron are Captain Foulis, Lieutenants Milling, Morrow, Chapman, Carberry, Bowen, Jones, Willis, Rader, Fitzgerald, MacDill, Gantz, Harms, Christy and Sutton.

Lieutenant Dargue has been conducting experiments with the Very pistol to determine its usefulness in signaling from flying machines to the ground.

During the past week four aviation students, Lieutenants Rader, Gantz, Harms and Gorrell, have successfully finished their tests for Junior Military Aviator.

Lieutenant Ralph C. Holliday has been relieved from duty at the school. He left this station July 1st to join his regiment, the 22nd Infantry.

### Eppelsheimer Resigns from Herald Staff

The New York *Herald* has just parted with its aeronautic editor, Frederick Eppelsheimer, whose articles on aviation have long been familiar to those interested in the subject, and whose acquaintances number many men prominent in the new science on both sides of the Atlantic. His predecessor in the *Herald* was Byron R. Newton, assistant secretary of the Treasury and one of the National Advisory Committee for Aeronautics, who was one of the few newspaper men gathered on the sands at Kill Devil, eleven years ago last December, and who gave to the world the news of the Wrights' first flight. Mr. Eppelsheimer hopes to maintain his connection with aeronautics as a special writer, believing that it is on the verge of tremendous development, rather than to return to general newspaper work.

The Maximilian Schmitt Military Tractor. Mr. Schmitt is shown standing on the extreme right





# AEROPLANE ENGINES\*

By Neil MacCoull, M. E.

Continued from Page 407, July 12, 1915.

As may be seen, the intake valves are automatic, and the exhaust valves are operated from a central cam. This cam, which has two points 180° apart, rotates at one-quarter engine-speed in the opposite direction. The light weight of the whole valve mechanism is noteworthy. As all parts were lubricated by oil cups, very little unnecessary oil was used, giving a consumption which is superior to what is usually required by such engines. This engine, which was completed in December, 1901, was given three ten-hour runs while connected up to water dynamometers and showed a performance which is not often surpassed even to-day. At 950 r.p.m. 52.4 horsepower was delivered, giving a specific weight of but 2.37 pounds per horsepower, based on the stripped weight of the engine, which is 124.17 pounds. The complete engine, including balance weights, ignition coil and batteries, carbureter, radiator, water and gasoline tanks and all other accessories, and with radiator, water tank and jackets filled with water, is 191.6 pounds, or only 3.65 pounds per horsepower.

## Salmson (French)

This is the only well known water-cooled radial engine on the market. The valves, which are in the cylinder heads, are operated by individual cams placed side-by-side on the same spindle. The unusual valve springs are worthy of notice, since the object of this construction is to keep the springs away from the heat of the cylinders.

All connecting-rods are identical and pinned at equal distances around a collar which surrounds the crank-pin bearing, no master rod being used. In order to prevent the collar from rotating about the crank-pin as a center, its position is determined by a train of three gears of equal diameter: one fixed to the collar; one to the crankcase, concentric with the shaft; and the third fixed to the crankweb, as an idler between the other two. This construction secures an equal angularity for each

connecting-rod, which is not a characteristic of rods pinned to a master rod, as in the case of the Gnome and Gyro.

## Adams-Farwell (American)

The Adams-Farwell was the first air-cooled revolving aeroplane engine to be placed on the market. It had five cylinders with a bore and stroke of six inches, and was rated at 72 horsepower at 1,000 r.p.m. At the time it was designed this was considered more power than the average aviator would need. One of the most interesting features of this engine was the elimination of the

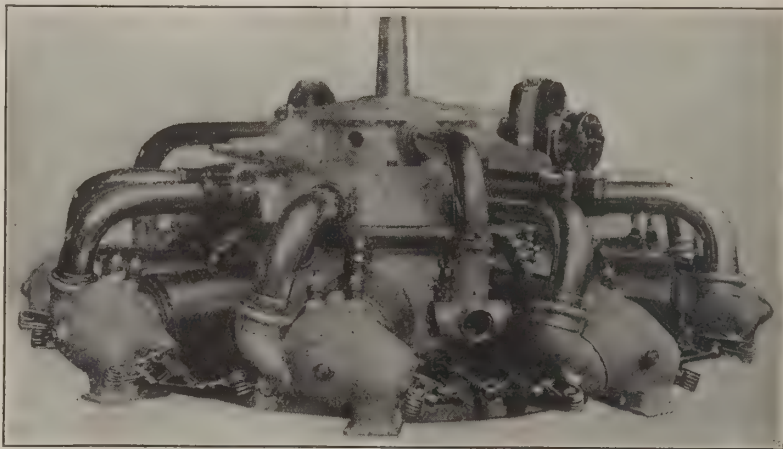


Fig. 3.—300 H.P. Salmson Radial Engine with Horizontal Cylinders. This horizontal construction reduces most of the difficulties of lubrication and water circulation characteristic of radial engines with cylinders in a vertical plane, though the propeller must be driven through a bevel gear

carbureter, the fuel being injected into the cylinders. This made it possible to do away with the intake valve and to employ one valve for both intake and exhaust as only air was drawn in by the suction stroke of the piston. During this stroke, gasoline was sprayed into the cylinder where it was mixed with the charge of air before compression. Having but one valve in the head of the cylinder, it was possible to make it amply large to insure a full charge and a free exhaust.

In order to relieve the valve mechanism from the heavy load of opening a large valve against the pressure at the time exhaust took place, the cylinders were provided with auxiliary exhaust ports, which were uncovered by the piston on its downward stroke. No check-valves were required over these auxiliary ports, as on the suction stroke pure air and not a mixture of gas was drawn in, so what air was drawn in through the ports on the suction stroke became a part of the combustible mixture. Another feature of interest was the use of cooling fins parallel to the bore of the cylinders, instead of circumferentially, the theory being that the rapidly revolving cylinders throw the air out radially, like a centrifugal blower.

## Gyro-Duplex (American)

The Gyro-Duplex engines are now marketed in seven and nine cylinder models. They are revolving air-cooled engines, distinguished by an unusual valve action in which a poppet exhaust valve is combined with a piston-valve which controls the intake and an auxiliary exhaust. The action of this valve mechanism may be understood from Fig. 6. Starting with the power stroke, the main piston *P* moves down until it uncovers the exhaust ports *A*. At this moment the intake piston-valve *C* is in the position shown, and consequently the exhaust gases are free to escape. After the pressure in the cylinder has been relieved,

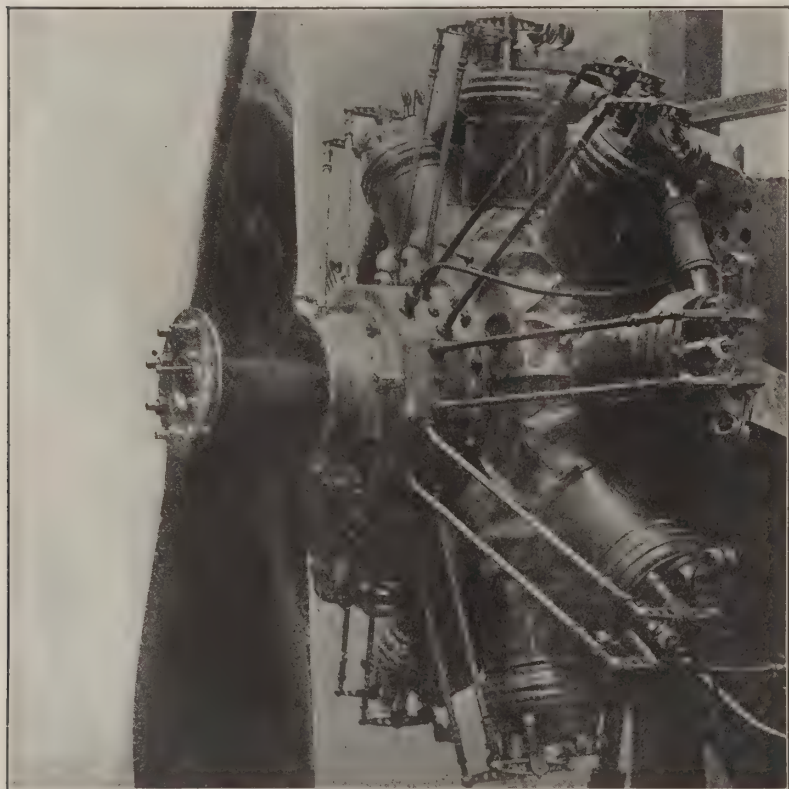


Fig. 4.—110 H.P. Nine-Cylinder Salmson Radial Engine

\*A paper presented before the Society of Automobile Engineers, June, 1915.



the main exhaust valve *D* opens. The upward travel of the piston forces all of the remaining burnt gases out of the main exhaust valve, which remains open, allowing fresh air to be drawn in as the piston starts down on the intake stroke. Just before the main piston again reaches the auxiliary port, the main exhaust valve closes. The piston-valve has now reached its top position, so that when the main piston uncovers the port, there is a free passage for gas from the crankcase to the cylinder. The gas which enters combines with the air already in the cylinder to form the proper

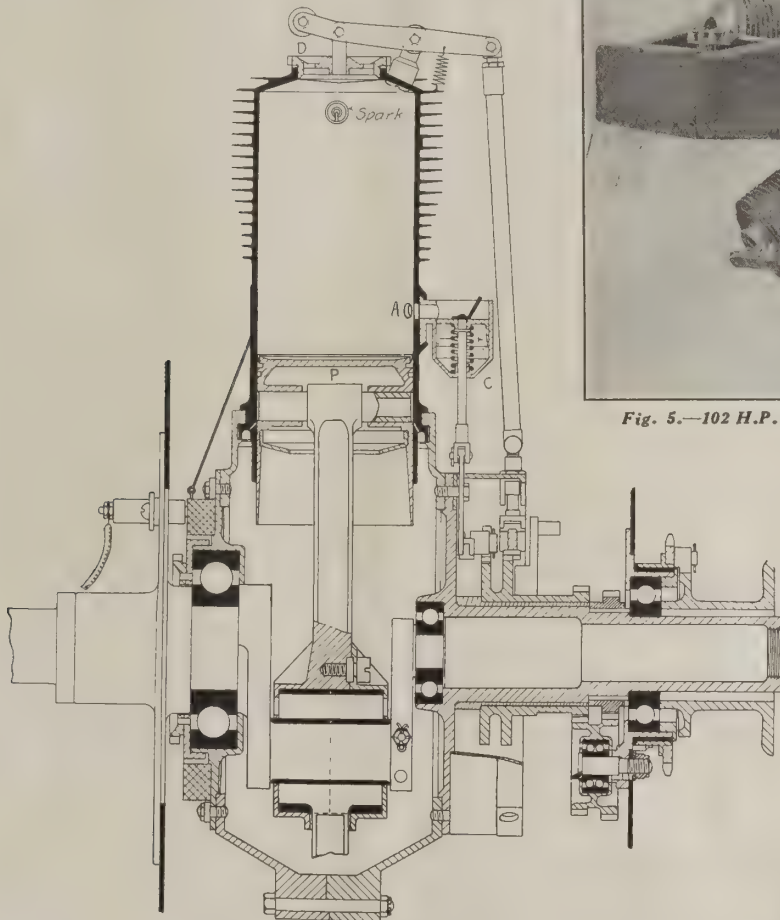


Fig. 6.—Cross-Section of Gyro-Duplex Engine

explosive mixture. It should be noticed that the exhaust valve does not open against pressure, and that it is not subjected to as great heat as the usual exhaust valve.

The piston-valves are operated from one cam, and the exhaust valves from another, each of these cams having four points on the seven-cylinder and five on the nine-cylinder engines. These two cams are integral (giving the name duplex) and rotate in the same direction as the engine, but at  $\frac{1}{2}$  engine-speed for the seven-cylinder, and  $\frac{2}{3}$  engine-speed for the nine-cylinder engine. The centrifugal force of the mechanism holds the exhaust valve to its seat and the follower of the piston-valve to its cam, so that no springs are required except for starting.

As usual with most air-cooled revolving and radial engines, the cylinders are machined from solid billets of steel. A master connecting-rod is used, the lower end of which is like a box, and encloses two heavy bronze bushes which bear on the crankpin. Each of the other connecting-rods is provided with a pin which has its bearing in these bushes, as may be seen from the drawing. It will be noticed that the crankshaft is in two parts, so as to allow the master rod and its two unsplit bushes to be assembled on the crankpin.

Gasoline is sprayed into the crankcase by a miniature gear pump, and is taken from there to the piston-valves by pipes. Lubrication is accomplished by two pumps, one furnishing a forced feed to the crank-pin bearing, and the other a spray to the cylinders and wrist-pin.

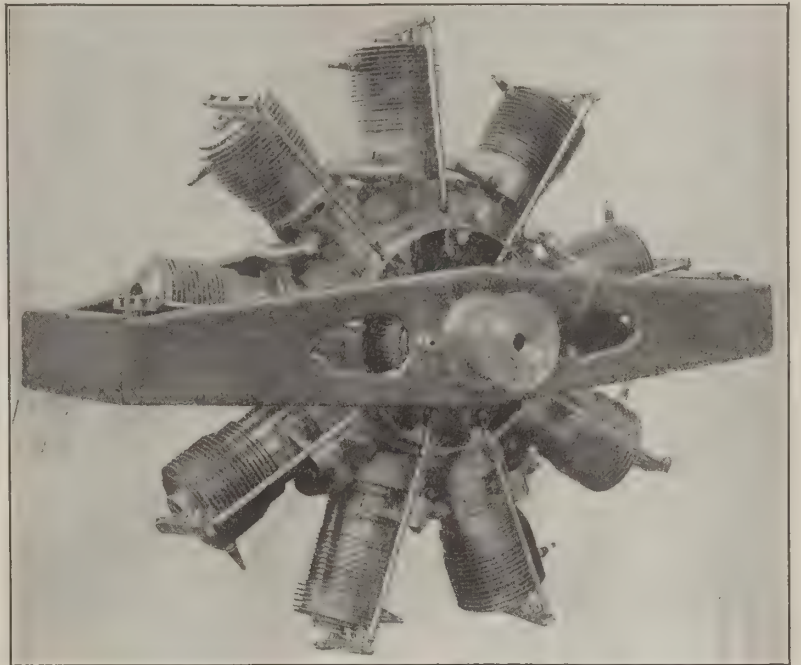


Fig. 5.—102 H.P. Gyro-Duplex, Revolving Engine, with frame by which it is mounted in an aeroplane

#### The Old Gyro (American)

The engine which was replaced by the Gyro-Duplex is shown in Fig. 8. It had a poppet intake-valve in the head of the piston and an exhaust in the head of the cylinder. The mechanism of the intake was ingenious, as may be seen from Fig. 9. Upon an extension from the top end of the connecting-rod a lever is pivoted, the free end of which makes contact with a second lever which operates the valve. By centrifugal force the mass of the lever supported on the rod is thrown outward and presses against the valve-operating lever, so that the valve will be opened or closed according to whether the contact is made on the side of the lever nearest or farthest from the valve, by the oscillation of the connecting rod, the period of opening being  $180^\circ$ . It will be clear that the opening effect will be produced on the power stroke of the piston, as well as the suction stroke, but on account of the high pressure within the cylinder, it will be insufficient to open the valve. (To Be Continued)

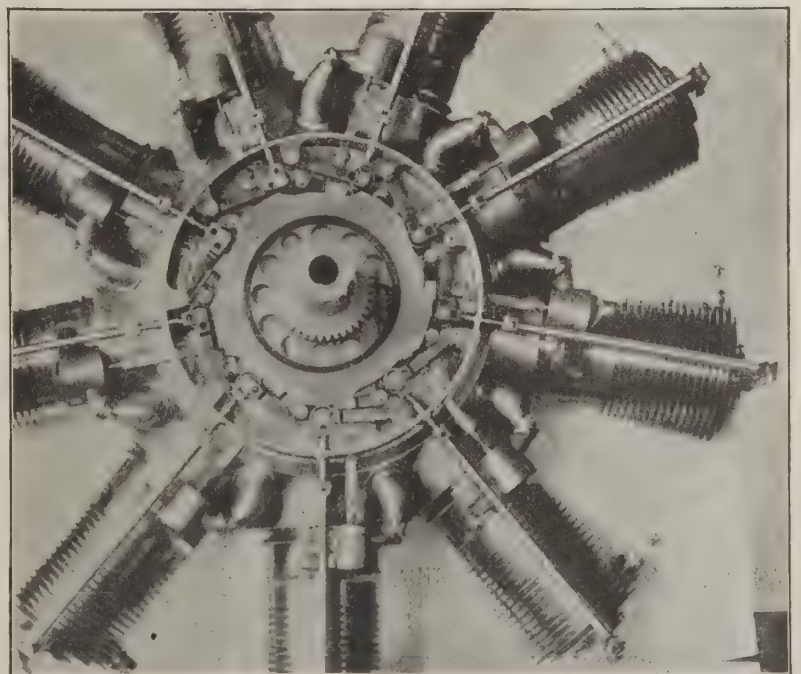


Fig. 7.—The Five-Pointed Cam and Valve Mechanism of one of the Early Nine-Cylinder Gyro-Duplex Engines



# STABILITY OF AEROPLANES

Presented at the stated meeting of the Franklin Institute held Wednesday, May 20, 1914, when Dr. Wright received the Franklin Institute's Elliott Cresson Medal in recognition of the epoch-making work accomplished by him in establishing on a practical basis the science and art of aviation. Reprinted, by permission, from the Journal of the Franklin Institute, by the Smithsonian Institution

By Orville Wright, B. S., LL. D.

The subject of "stability of aeroplanes" is too broad to permit of a discussion of all of its phases in one evening. I shall, therefore, confine myself more particularly to a few phases of the fore-and-aft or longitudinal equilibrium. Although in learning to fly the beginner finds most difficulty in mastering the lateral control, it is his lack of knowledge of certain features of the fore-and-aft equilibrium that leads to most of the serious accidents. These accidents are the more difficult to avoid because they are due to subtle causes which the flyer does not at the time perceive.

A flying machine must be balanced in three directions—about an axis fore and aft in its line of motion, about an axis extending in a lateral direction from tip to tip of the wings, and about a vertical axis. The balance about the lateral axis is referred to as fore-and-aft or longitudinal equilibrium; that about the fore-and-aft axis as lateral equilibrium; and that about the vertical axis is generally referred to as steering, although its most important function is that of lateral equilibrium.

If the center of support of an aeroplane surface would remain fixed at one point, as is practically the case in marine vessels and in balloons and airships, equilibrium would be a simple matter. But the location of the center of pressure on an aeroplane surface changes with every change in the angle at which the air strikes the surface. At an angle of 90° it is located approximately at the center of the surface. As the angle becomes less, the center of pressure moves forward. On plane surfaces it continues to move forward as the angle decreases until it finally reaches the front edge. But on cambered surfaces the movement is not continuous. After a certain critical angle of incidence is reached, which angle depends upon the particular form of the surface, the center of pressure moves backward with further decrease in angle until it arrives very close to the rear edge. At angles ordinarily used in flying, angles of 3° to 12°, the travel of the center of pressure is in this retrograde movement and is located, according to the angle of incidence, at points between 30 per cent. and 50 per cent. back of the front edge of the surface. The location of the center of pressure on any given surface is definitely fixed by the angle of incidence at which the surface is exposed to the air.

The placing of the center of gravity of the machine below its center of support appears, at first glance, to be a solution of the problem of equilibrium. This is the method used in maintaining equilibrium in marine vessels and in balloons and airships, but in flying machines it has the opposite of the desired effect. If a flying machine consisting of a supporting surface, without elevator or other means of balancing, were descending vertically as a parachute, the center of gravity vertically beneath the center of support would maintain its equilibrium. But as soon as the machine begins to move forward the center of pressure, instead of remaining at the center of the surfaces, as was the case when descending vertically, moves toward that edge of the surface which is in advance. The center of gravity being located at the center of the surface and the center of pressure in advance of the center of the surface, a turning moment is created which tends to lift the front of the machine, thus exposing the surfaces at a larger angle of incidence and at the same time to a greater resistance to forward movement. The momentum of the machine, acting through its center of gravity below the center of forward resistance, combines with the forward center of pressure in causing the surface to be rotated about its lateral axis. The machine will take an upward course until it finally comes to a standstill. The rear edge of the surface will now be below that of the front edge and the machine will begin to slide backward. The center of pressure immediately reverses and travels toward the rear edge of the surface, which now in the backward movement has become the front edge. The center of gravity again being back of the center of pressure, the advancing edge of the surface will be lifted as before, and the pendulum effect of the low weight will be repeated. A flying machine with a low center of gravity, without rudders or other means to maintain its equilibrium, will oscillate back and forth in this manner until it finally falls to the ground.

It will have been observed from the foregoing that the equilibrium in the horizontal plane was disturbed by two turning moments acting about the lateral horizontal axis of the machine; one produced by the force of gravity and the lift of the surface acting in different vertical lines, and the other by the center of momentum and the center of resistance acting in different horizontal lines.

It is evident that a low center of gravity is a disturbing instead of a correcting agent. The ideal form of flying machine would be one in which the center of gravity lies in the line of the center of resistance to forward movement and in the line of thrust. In practice this is not always feasible. Flying machines must be built to land safely as well as to fly. A high center of gravity tends to cause a machine to roll over in landing. A compromise is therefore adopted. The center of gravity is kept high enough to be but a slight disturbing factor in flight and at the same time not so high as to interfere in making safe landings.

The three forces acting on an aeroplane in the direction of its line of motion are the thrust of the propellers, the momentum or inertia of its weight, and the resistance of the machine to forward travel. If traveling in any other than a horizontal course, a component of gravity in the line of motion will have to be reckoned with. When these forces are exerted in the same line, with the centers of thrust and momentum acting in the opposite direction to that of the center of resistance, a variation in the quantity of any one, or of all, of these forces will not in itself have a disturbing effect on the equilibrium about the lateral horizontal axis. But these forces in the ordinary flying machine do not act in the same line. Usually the center of thrust is high, in order to give proper clearance between the propellers and the ground; the center of gravity is low, to enable the machine to land without danger of being overturned; and the center of resistance is usually between the centers of thrust and gravity. When a flying machine is traveling at uniform speed the propelling forces exactly equal the resisting forces. In case the thrust of the propellers is diminished by throttling the motor, the momentum of the machine acting below the center of resistance carries the lower part of the machine along faster than the upper part, and the surfaces thus will be turned upward, producing a greater angle and a greater resistance. The same effect is produced if the machine be suddenly struck by a gust of wind of higher velocity from in front. The thrust of its propellers will be temporarily slightly decreased, the resistance due to the greater wind pressure will be increased, and the momentum of the machine (the center of gravity being low) will in this case also turn the surfaces upward to a larger angle. While these variations in the forces acting in the horizontal line have of themselves a certain amount of disturbing effect, yet it is from the changes of incidence which they introduce that one encounters the greatest difficulty in maintaining equilibrium.

The two principal methods used in preserving fore-and-aft equilibrium have been, first, the shifting of weight so as to keep the center of gravity in line with the changing center of lift; and, second, the utilization of auxiliary surfaces, known as elevators, to preserve the position of the center of pressure in line with a fixed center of gravity. The first method has been found impracticable on account of the impossibility of shifting large weights quickly enough. The second method is that used in most of the flying machines of to-day.

Flying machines of this latter type should have their auxiliary surfaces located as far as possible from the main bearing planes, because the greater the distance the greater is the leverage and consequently the smaller the amount of surface required. The auxiliary surfaces are usually placed either in front or in the rear of the main supporting surfaces, since they act with greater efficiency in these positions than when placed above or below.

With a view to high efficiency, no part of either the main surfaces or the auxiliary surfaces should be exposed on their upper sides in a way to create downward pressures. One pound of air pressure exerted downward costs as much in propelling power as 2 pounds of downward pressure produced by actual weight carried. This is due to the fact that the total pressure on an aeroplane is not vertical, but approximately normal to the plane of the surface. This pressure may be resolved into two forces, one acting in a line parallel with the direction of travel, and the other at right angles to the line of travel. One is termed "lift" and the other "drift." With a given aeroplane surface, the drift and lift for any given angle of incidence always bear a definite ratio to one another. This ratio varies from 1 to 12, to 1 to 1, according to the angle of incidence and the shape of the surface. On an average it is about 1 to 6, so that the thrust required of the propeller in the ordinary flying machine is approximately one-sixth of the weight carried. When traveling on a horizontal course the lift is vertical and is exactly equal to the total weight of the machine and load. This load may be real weight, or it may be partly real weight and partly downward pressures exerted on parts of the surfaces. For every pound of weight carried, a thrust of approximately one-sixth pound is required. If, however, instead of real weight a downward air pressure is exerted on some part of the machine, this downward pressure must be overcome by an equal upward pressure on some other part of the machine to prevent the machine from descend-



ing. In this case the horizontal component of the one pound downward pressure will be about one-sixth pound, and the horizontal component of the compensating upward pressure also will be about one-sixth pound, making a total of one-third pound required in thrust from the propellers, as compared with one-sixth pound thrust required by one pound actual weight carried. It is, therefore, evident that the use of downward air pressures in maintaining equilibrium is exceedingly wasteful, and, as far as possible, should be avoided. In other words, when the equilibrium of an aeroplane has been disturbed, instead of using a downward air pressure to depress the elevated side an upward pressure should be utilized to elevate the low side. The cost in power is twice as great in one case as in the other.

The dynamically less efficient system of downward air pressures is used to some extent, however, on account of its adaptability in producing more or less inherently stable aeroplanes. An inherently stable aeroplane may be described as one in which equilibrium is maintained by an arrangement of surfaces, so that when a current of air strikes one part of the machine, creating a pressure that would tend to disturb the equilibrium, the same current striking another part creates a balancing pressure in the opposite direction. This compensating or correcting pressure is secured without the mechanical movement of any part of the machine.

The first to propose the use of this system for the fore-and-aft control of aeroplanes was Penaud, a young French student, who did much experimenting with model aeroplanes in the seventies of the last century. His system is used only to a slight extent in the motor-driven aeroplanes of to-day, on account of its wastefulness of power and on account of its restriction of the manoeuvring qualities of the machine.

Penaud's system consists of a main bearing surface and a horizontal auxiliary surface in the rear fixed at a negative angle in relation to the main surface. The center of gravity is placed in front of the center of the main surface. This produces a tendency to incline the machine downward in front, and to cause it to descend. In descending the aeroplane gains speed. The fixed surface in the rear, set at a negative angle, receives an increased pressure on its upper side as the speed increases. This downward pressure causes the rear of the machine to be depressed till the machine takes an upward course. The speed is lost in the upward course, the downward pressure on the tail is relieved, and the forward center of gravity turns the course again downward. While the inherently stable system will control a machine to some extent, it depends so much on variation in course and speed as to render it inadequate to meet fully the demands of a practical flying machine.

In order to secure greater dynamic efficiency and greater manoeuvring ability, auxiliary surfaces mechanically operable are used in present flying machines instead of the practically fixed surfaces of the inherently stable type. These machines possess the means of quickly recovering balance without changing the direction of travel and of manoeuvring with greater dexterity when required. On the other hand, they depend to a greater extent upon the skill of the operator in keeping the equilibrium. It may be taken as a rule that the greater the dynamic efficiency of the machine and the greater its possibilities in manoeuvring, the greater the knowledge and skill required of the operator.

If the operator of a flying machine were able to "feel" exactly the angle at which his aeroplane meets the air, 90 per cent. at least of all aeroplane accidents would be eliminated. It has been the lack of this ability that has resulted in so large a toll of human lives. Instruments have been produced which indicate closely the angle of incidence at which the machine is flying, but they are not in general use. Nor does the average flier realize how exceedingly dangerous it is to be ignorant of this angle. Most of the fliers are aware that "stalling" is dangerous, but do not know when they really are "stalling."

A flying machine is in great danger when it is flying at its angle of maximum lift. A change either to a smaller or a larger angle results in a lesser lift. There is this important difference, however, whether the angle be increased or decreased. While a smaller angle gives less lift, it also has less drift resistance, so that the machine is permitted to gain speed. On the other hand, the larger angle gives not only less lift but encounters a greater resistance, which causes the speed of the machine to be rapidly checked, so that there is a double loss of lift—that due to angle and that due to a lesser speed.

The maximum lift is obtained in most flying machines at some angle between  $15^{\circ}$  and  $20^{\circ}$ . If the machine be gliding from a height with the power of the motor throttled or entirely turned off, and the operator attempts to turn it to a level course, the speed of the machine will soon be reduced to the lowest at which it can support its load. If now this level course be held for even only a second or two, the speed and the lift will be so diminished that the machine will begin to fall rapidly.

The center of pressure on a cambered aeroplane surface at

angles greater than  $12^{\circ}$  to  $15^{\circ}$  travels backward with increase of angle of incidence, so that when a machine approaches the "stalled" angles the main bearing surfaces are generally carrying practically all of the weight and the elevator practically none at all. Under these conditions the main surfaces fall more rapidly than does the rear elevator. The machine noses downward and plunges at an exceedingly steep angle toward the earth. This plunge would tend to bring the machine back to normal speed quickly were the machine flying at its usual angle of incidence. But at the large angles of incidence the drift is a large part of the total pressure on the surfaces, so that, although plunging steeply downward, speed is recovered but slowly. The more the operator tries to check the downward plunge by turning the elevator, the greater becomes the angle of incidence, and the greater the forward resistance. At ordinary stalled angles the machine must descend at an angle of about  $25^{\circ}$  with reference to the horizontal in order to maintain its speed. If the speed be already below that necessary for support, a steeper angle of descent will be required, and considerable time may be consumed before supporting speed can be recovered. During all this time the machine is plunging downward. If the plunge begins at a height of less than 200 or 300 feet, the machine is likely to strike the ground before the speed necessary to recover control is acquired.

The danger from "stalling" comes in the operator attempting to check the machine's downward plunge by turning the main bearing surfaces to still larger angles of incidence, instead of pointing the machine downward, at a smaller angle of incidence, so that the speed can be recovered more quickly. It is safe to say that fully 90 per cent. of the fatal accidents in flying are due to this cause. Most of the serious ones occur when, after long glides from considerable heights, with the power of the motor reduced, an attempt is made to bring the machine to a more level course several hundred feet in the air. The machine quickly loses its speed and becomes "stalled." All of us who have seen the novice make a "pancake" landing, have seen the beginning of a case of "stalling" which might have been fatal had it taken place at a height of 100 or 200 feet.

The greatest danger in flying comes from misjudging the angle of incidence. If a uniform angle of incidence were maintained, there would be no difficulty in fore-and-aft equilibrium. As has already been stated, for any given surface and any given angle of incidence the position of the center of pressure is fixed. Under these conditions, if the center of gravity were located to coincide with the center of pressure and a uniform angle of incidence maintained, the machine would always be in equilibrium.

It is in accordance with this principle that experiments the past year have brought about a considerable advance in the development of automatic stability. A small horizontal wind vane is so mounted on the machine as to ride edgewise to the wind when the machine is flying at the desired angle of incidence. In case the machine varies from the desired angle, the air will strike the vane on either its upper or lower side. The slightest movement of the vane in either direction brings into action a powerful mechanism for operating the controlling surfaces.

If the wind strikes the vane on the underside, as would be the case when the machine takes a larger angle of incidence, the elevator is turned to cause the machine to point downward in front till the normal angle is restored. If the air strikes the vane from above, a smaller angle of incidence is indicated, and an opposite action on the elevator is produced. In this system no particular angle of the machine with the horizontal is maintained. It is the angle at which the air strikes the aeroplane surface that is important. If the vane is set at an angle of  $5^{\circ}$  with the main supporting surfaces, and the machine is traveling on a level course, increasing the power of the motor will cause it to begin taking on more speed. But as the lifting effect of an aeroplane surface is the product of two factors—its speed and its angle of incidence—any increase in speed will produce a greater lift and cause the machine to rise. The machine will now be turned upward, with the surfaces meeting the air at an angle of  $5^{\circ}$ . On the contrary, if the power of the motor be reduced or entirely turned off, the machine will immediately begin to decrease in speed, requiring a large angle of incidence for support. But as soon as the angle begins to increase the air will strike the regulating vane on the underside and the elevator will be turned pointing the machine downward till the component of gravity in the direction of travel beomes sufficient to maintain the normal speed. In this case the planes will be inclined downward with reference to the horizontal. It is evident that a machine controlled by regulating the angle of the machine with reference to the impinging air is not liable to the dangers of "stalling" already described.

Several other methods of maintaining fore-and-aft equilibrium automatically have been proposed. One utilizes the force of gravity acting on a pendulum or a tube of mercury; the other, the gyroscopic force of a rapidly revolving wheel. In both of these systems the angle of the machine is regulated with reference to the horizontal, or some other determined plane, instead of with the angle of the impinging air.

In the case just referred to, in which the power of the motor was suddenly turned off while traveling on a level course, with these systems, the planes would be maintained at their original angle with the horizontal without any regard to the angle of incidence. The machine would continue forward till, through the loss of momentum, its speed would become so reduced and its angle of incidence so great that it would be exposed to the dangers of diving.

The pendulum and mercury tube have other serious faults which render them useless for regulating fore-and-aft equilibrium. If the machine suddenly meet with a greater resistance to forward travel, either as a result of change in direction or of meeting a stronger gust of wind from in front, and its speed be ever so slightly checked, the pendulum will swing forward and instead of turning the machine downward, so as to maintain the normal speed, will cause the machine to be inclined upward in front and thus further increase its forward resistance.

The pendulum has proved itself an exceedingly useful device, however, in regulating the lateral stability of aeroplanes. In this case the effects of momentum and centrifugal force act on the pendulum in the proper direction to produce desired results.

I believe the day is near at hand when the flier will be almost entirely relieved of the work of maintaining the equilibrium of his machine, and that his attention will be required only to keeping it on its proper course and in bringing it safely in contact with the ground when landing.



## The Daugherty-Stupar Tractor Biplane

By Walter H. Phipps



THE new Daugherty-Stupar tractor biplane designed and constructed by Max Stupar, constructor for the Chicago Aero Works and flown so successfully by Earl S. Daugherty, belongs to what might be called the new American type of tractor biplane, striking as it does a medium between the heavy stable German biplanes and the light fast English biplanes.

Having back-swept wings which give it considerable inherent stability it is nevertheless not robbed of its quick climbing capabilities. Further being extremely light and quite short coupled, it responds very quickly to its controls and consequently can be flown in restricted places when the heavier type of German back-swept plane machines could not be used at all. This is a great advantage for military and exhibition work where it is absolutely imperative that the machine be able to get in and out of restricted places and capable of climbing quickly in avoiding obstacles or rising above the enemies' fire.

Equally important is the field of vision afforded the observer and pilot and this is especially good in the Daugherty-Stupar biplane where on account of the observer's position well forward and the back-sweep of the planes he is afforded a good vision downward as well as forward, while the pilot too can see straight downward as well as forward owing to his position well in back of the main planes.

Special attention has been given to the quick assembling and dismantling of the various parts, so that it should be suitable for exhibition and military purposes. For this reason the different parts have been made with quick detachable joints while the main planes are made in sections.

### Planes

Top and bottom planes have a span of 38 ft. and 26 ft. respectively, whilst the respective chords are 5 feet and 4 feet. The gap is 4 ft. 6 inches. The top plane is divided into four sections, consisting of two 11 ft. inner sections and two outer sections of 8 ft. each. The planes are separated by four pairs of spruce struts, two sets to each side and by two pairs of inverted V-pylons in the centre.

The top attachment of the interplane struts, is by means of eye-bolts fixed to the spars, and the attachment to the lower plane is by quick detachable fittings which permit the withdrawal

of the struts without interfering with the adjustment of the bracing. If required the top plane extensions can be replaced by small sections so as to give a total span of 26 ft., for speed work. The planes are built up on two spars, the front ones of D section, forming the leading edge and the rear ones of rectangular section, spaced 3 ft. 6 ins. from the former; both front and rear spars measure 1½ ins. by 1½ ins. The ribs are built up of spruce battens and webs, glued and nailed together, and fastened front and back to the spars by metal strips. They are spaced at intervals of 1 ft., and have a maximum thickness of 1½ ins. The wing section has a maximum camber of 3¼ ins. for the top plane, that of the lower plane being in proportion, situated at a point 30 per cent. of the chord from the leading edge. The whole wing framework is strongly braced with steel wire, and covered with linen treated with Emaillite. Hinged to the rear spars of the top plane extensions are the ailerons, which are interconnected. The tail planes consist of a fixed surface, 10 sq. ft. area, of very high aspect ratio, hinged to which are two elevator flaps of about 10 sq. ft. each, with a partly balanced vertical rudder mounted between them. The tail is protected by a rubber sprung skid.

The body is of rectangular section, divided into two portions to facilitate shipment. The longitudinals and struts of the front section are of ash, and those of the rear half are of spruce. The engine, a 50 h.p. Gnome, is mounted in the nose of the body, and partially enclosed by a metal cowl. Immediately behind the engine is the passenger's cockpit, and behind that again, at the rear the pilot's seat.

The landing chassis is both simple and effective and consists of two sets of V-struts, the two rear members of which extend forward to form skids. To these is simply sprung a cross axle carrying two 26-inch wheels.

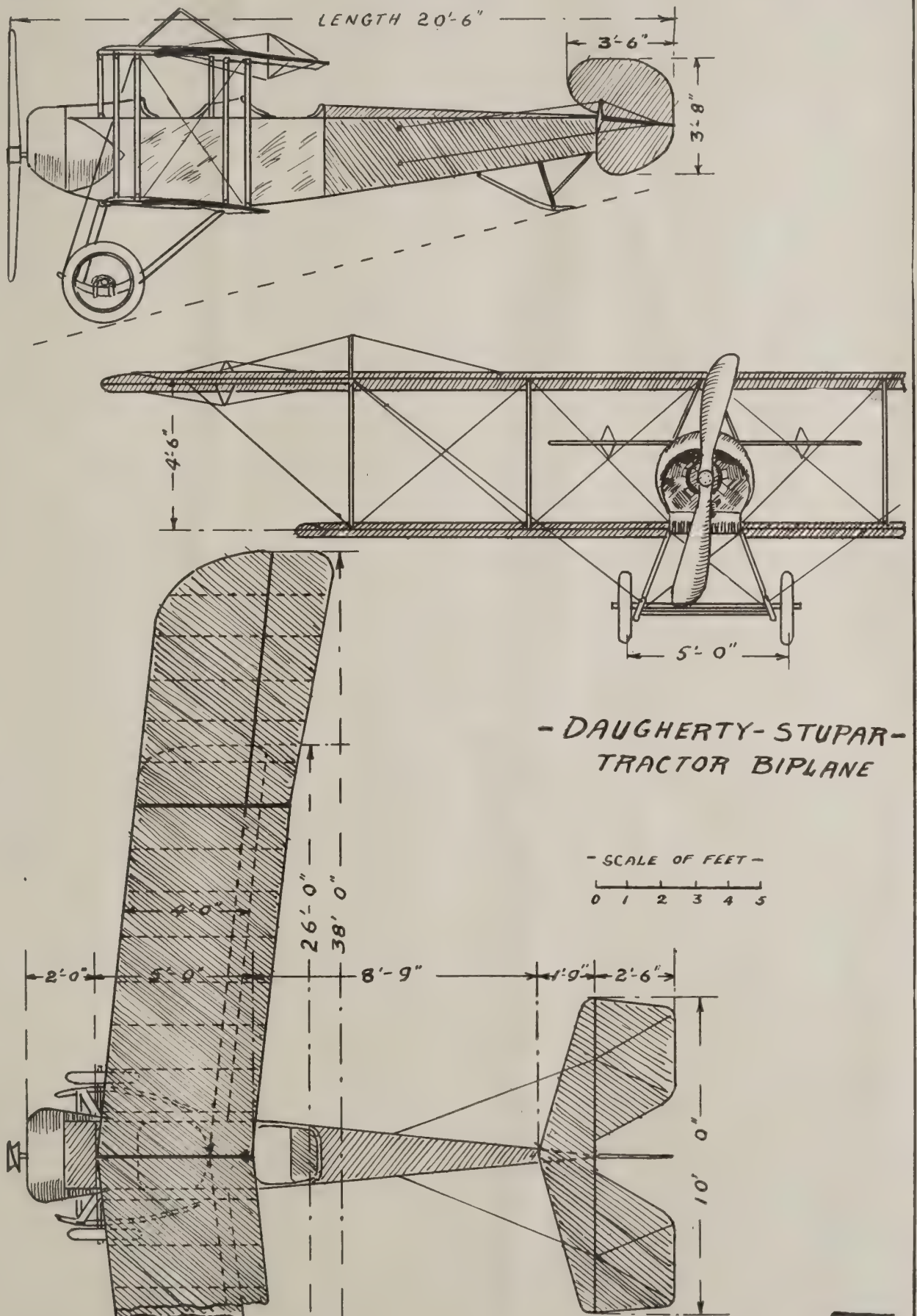
### Specifications

Span Top.....	38'-0"
Span Bottom.....	26'-0"
Chord Top.....	5'-0"
Chord Bottom.....	4'-0"
Gap.....	4'-6"
Area.....	286 sq. ft.
Length.....	20'-6"
Landing Gear.....	2 wheels
Lateral Control.....	Interconnected aileron
Motor Make.....	Gnome
Horsepower.....	50



Earl Daugherty in the 50 h.p. Daugherty - Stupar tractor biplane about to start a flight from the sands at Long Beach, Cal. Note the short fuselage, simple chassis and back-swept planes.

# Scale Drawings of the Daugherty Stupar Tractor Biplane







# Foreign News

Edited by L. d'Orcy



## Austria

An Austrian aeroplane, carrying a pilot and an observer, fell down a precipice on to the spur of Monte Nero on July 3 and was smashed. It was many hours before the bodies of the two aviators could be reached.

## Belgium

A Rotterdam dispatch to the *Daily Mail* states that on July 8 an allied squadron of twenty aeroplanes raided Bruges and caused great destruction to the railroad sheds.

## Denmark

Three German airmen, who were interned after landing on Danish soil and subsequently escaped, were recaptured at Odense on July 12 in disguise.

## Germany

According to a dispatch received from the *Daily Mail* correspondent at Basel, Germany is shortly to put into the air a fighting triplane which is expected to be able to overcome anything else that flies. The new machine, it is said, will have three planes and be powerful enough to carry twenty men, four machine guns and a revolver gun. It will be equipped with eight Maybach motors such as are used to propel the Zeppelins, the engines being coupled together in pairs, each couple driving one set of propellers.

The revolver gun will be mounted on an armored tower, while the entire underbody of the machine will be armor plated and shaped like an inverted roof in order to avoid anti-aircraft bombs from below.

All the steering, with the exception of changes in altitude, will be executed with the aid of motors. Turns will be effected by inclining the propellers. Two motors will be sufficient to propel the machine through the air, and when four are used the speed will be terrific.

The new machine is estimated to be three times as big and strong as any aeroplane now flying. Six of them will be tried out on the trenches in France and Belgium in a very short time.

According to the German official figures, supplemented to some extent by foreign newspaper reports, the Germans, Austrians and Turks had brought down 136 hostile aircraft up to June 22. Of these the largest number, namely 57, were lost by the French; the English lost 47. The Russians have fewer aeroplanes than their allies, hence their losses reached only 26.

While most of the aeroplanes were brought to earth by artillery or machine gun fire from the ground, almost one-fifth of the French losses resulted from battles in the air.

## Great Britain

Passengers arriving from Europe bring authentic details of the Zeppelin raid on the Tyne on June 15, which had been suppressed by the British censor. According to these reports but one Zeppelin took part in the raid. It appeared over Wallsend about 11:40 P. M., flying north in the direction of an electric power station. It was driven off by anti-aircraft guns.

On the way the Zeppelin dropped bombs on the Northeastern Marine Engineering Works, where a considerable amount of damage was done to machinery, explosives as well as incendiary bombs being employed. Other bombs were dropped over a coal depot. No injury to persons in the Wallsend district was reported.

Crossing the river, the raider dropped two bombs near Hepburn colliery and made its way to Jarrow. Several bombs were aimed at the Palmer Shipbuilding and Iron Company's works, where a boy, the first victim, was killed. The plant was brightly lighted, as night work was going on, and it offered a splendid target. The victims of the bombs here comprised twelve workmen, who were killed instantly; four others, who died later in hospitals, and about thirty injured. The damage to the plant and material was considerable.

It was greater at the Northeastern Marine Engineering Works, where a new monitor was slightly damaged. Another bomb missed the stern of the new battleship *Resolution* by a few yards.

## Great Britain

The British Admiralty announces that with regard to the Berlin report of an air raid on Harwich the following are the facts of the incident, which otherwise "is hardly worth recording."

"On Saturday, (July 3) forenoon a German seaplane and an aeroplane appeared off Harwich, flying very high. Our aircraft immediately started in pursuit and drove them off. The hostile aircraft then dropped their bombs into the sea and made their escape, still flying at a great height."

According to a letter received by a New York lady from her sister who is residing in England, Zeppelins have been raining bombs on London every night this spring, but the extent of harm done by the air raiders is never given out for publication so strict has the British press censor become.

The writer adds that "all the girls in making engagements now add, 'bombs permitting.'"

Another report from London gives the following details about the recent activity of the Zeppelins which have raided the British Isles:

"In addition to the Zeppelin destroyed by young Warneford near Ghent, which was one of those on its way home from England, the North Sea fleet accounted for another. So much is certain. There seems good reason to believe the report that another was destroyed on its way home, although I do not believe the report that one was brought down on the east coast and that the men of its crew are now prisoners. The story, however, has some credence."

"It is not believed in London that the Zeppelins have stopped raiding. It is thought rather that the first big series of general reconnaissance work has been completed, and that in their own good time, with the knowledge accumulated thereby, the Germans will start another series."

"It is generally believed in London that there is no great desire, or rather no great belief, in the policy of shooting at a Zeppelin when it is over a thickly populated district. The shrapnel or other shells fired have little chance of finding their mark at the great height the Zeppelin keeps on these occasions, and may cause loss of life when they return to earth. One of the few persons killed in one raid, a woman, was a victim of a falling English shell."

"The English authorities believe that the place in which to tackle the invading Zeppelin is its own home. There it must descend to get into the hangar, which is as necessary to a Zeppelin as its shell is to a snail, and in so doing gives the aeroplane fighters of the Allies a chance of getting above and dealing with it, as happened near Ghent some days ago."

## Holland

A Rotterdam despatch says that two British airmen were compelled to land near Sas van Ghent on July 3. Their machine was riddled with bullets. The men have been interned.

## Italy

The following Italian official statement was given out on July 5:

"One of our dirigibles bombarded and seriously damaged the barracks at Trieste last night. The airship returned undamaged."

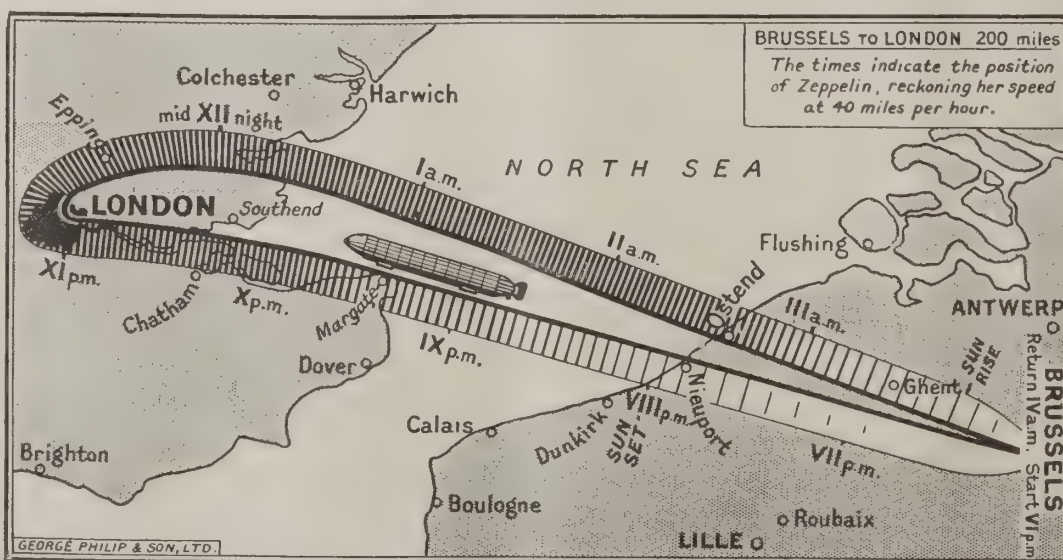
Discussing the possible menace to Rome from an Austrian air raid, the *Giornal d'Italia* expresses the belief that the Italian capital may consider itself virtually safe because it is 235 miles from Pola and 213 miles from the island of Lissa, the Austrian bases.

The aircraft of Austria have found it difficult to cover more than 315 miles in a straight flight, and it is regarded as impossible for them to make a raid on Rome and then complete the return journey.

During the night of June 6 an Italian dirigible bombarded Optshina railway junction (on the Trieste-Goritz line), and on the morning of the same day Italian aeroplanes bombarded Aisovizza aviation camp and caused fires at the Nabresina station (about nine miles from Trieste), returning safely.

## Turkey

Fifteen French and British aeroplanes and seaplanes attacked on July 5, the Turkish aerodrome at Chanak in the Dardanelles and were successful in striking the principal shed with a large bomb.







# MODEL NEWS

Edited by WALTER H. PHIPPS



## CLUBS

**THE AERO SCIENCE CLUB OF AMERICA**  
29 West 39th Street, New York City

**PACIFIC NORTHWEST MODEL  
AERO CLUB**  
915 Ravenna Boulevard, Seattle, Wash.

**LONG ISLAND MODEL AERO CLUB**  
401 Grant Ave., Cypress Hills, L. I.

**BAY RIDGE MODEL CLUB**  
6730 Ridge Boulevard, Bay Ridge, Brooklyn

**DETROIT AERO RESEARCH AND  
MODEL CLUB**  
c/o William P. Dean, 1363 Townsend Ave.,  
Detroit, Mich.

**BUFFALO MODEL AERO CLUB**  
c/o Christian Weyand, 787 Delaware Ave.,  
Buffalo, N. Y.

**THE ILLINOIS MODEL AERO CLUB**  
Room 130, Auditorium Hotel, Chicago, Ill.

**TEXAS MODEL AERO CLUB**  
517 Navarro St., San Antonio, Texas

**HARLEM MODEL AERO CLUB**  
23 West 106th Street, New York City

**MILWAUKEE MODEL AERO CLUB**  
402 Bradford Avenue, Milwaukee, Wisc.

**CONCORD MODEL CLUB**  
c/o Edward P. Warner, Concord, Mass.

**AERO CLUB OF ST. LOUIS**  
Columbia Bldg., 8th & Locust Sts.,  
St. Louis, Mo.

**MODEL AERO CLUB OF OXFORD**  
Oxford, Pa.

### The Aero Science Club

By G. A. Cavanagh

A very successful meeting was held on Saturday evening, July 10th. Many members were present and many discussions took place. The club had the pleasure of listening to a short talk on the new Wright flying boat by Mr. Oakley, of the Aeronautical Society. All members greatly appreciated Mr. Oakley's interesting talk. The two yearly membership certificates to the Aeronautical Society which were offered to the club to be given as prizes in contests, are to be granted to the first and second best flyers in the elimination contest to be held at Garden City, L. I., on August 1st. This contest is expected to be the biggest of its kind to be held in the vicinity of New York City for a long time and all members who have not yet stated their intentions of entering in this contest are requested to do so at the earliest possible date.

It is the desire of the Club to hold the first of the serial contests on August 22nd, at Garden City, L. I.

The Harlem Model Aeroplane Club has also stated its willingness to accept this as the date for the first contests stating that its members are almost ready to compete. The Bay Ridge Model Aeroplane Club has also stated its intentions of competing. The Aero Science Club and affiliated Clubs have stated their intentions of using a cyclometer instead of steel tape for measuring due to the fact that a large number of flyers will be present on that day which would make it impossible to complete the contest if the measuring were to be done by steel tape. The cyclometer to be used will be guaranteed and passed upon by representatives of the Aero Club of America. Messrs. Schoeber and Funk were present and exhibited pictures of their latest compressed air motor, but stated their intentions of making a still better one. Before this is completed, however, Mr. Schoeber will issue a challenge to Mr. J. McMahon who claims to have made a duration of 17 seconds with his compressed air model. If Mr. McMahon accepts the challenge it is the hope of Mr. Schoeber that the event will take place at Garden City, L. I., and an effort will be made to create an American record.

All members who wish to take part in the elimination contest to be held August 1st, are urgently requested to send in their names.

For further particulars, address the Secretary, No. 29 West 39th St., New York City.

### Model Flying and Its Purposes

By Harry G. Schultz

The writer has been asked a number of times the following questions: "What is the purpose of flying models; is it merely a sport for boys, or is there any knowledge to be gained that would aid in the construction of man-carrying or full-sized machines?"

Model flying can be considered in different ways. Some of the model flyers indulge in it for the purpose of whiling away their time while others indulge in it for the purpose of learning whatever can be learnt and which would aid them in the construction of man-carrying or full-sized machines.

If the new ideas of the would-be inventors were first tried out by means of the flying model there would be thousands of dollars saved yearly and less "Flying Tenement Houses" on the scene. When these inventors are spoken to on the subject, they no doubt will state that their ideas were embodied in the model, said model being in the form of a glider, the same being cast from a balloon or high elevation and because of the fact that the glider descended to the earth safely they consider themselves to be possessors of a remarkable invention. This is merely a half-way method of testing out a new idea. Let the invention be embodied in a model equipped with power, let the model be adjusted and be placed on the ground. If it will rise and show good stability and good qualities of flight, it is then time to think of embodying the same in a full sized machine. If this is done, much of this wanton waste of money will be avoided.

The model aeroplane of to-day has reached the stage of being practically perfect. It will fly in winds that will keep a man-carrying machine on the ground. When equipped with skids or running gear it will rise from the ground, show perfect stability, soar away for over fifteen hundred feet and alight perfectly at the end of a flight. When the model is equipped with pontoons or floats it will skim the water, rise gracefully from the surface and fly off. Anything that can be done by a man-carrying machine can be duplicated by its miniature edition, the model aeroplane. Scarcely had the first hydroaeroplane risen from the water when this feat was duplicated in model form. One young enthusiast has attached a parachute dropping device to his model which enables the parachute to be dropped at any predetermined time.

The canard type machine such as Valkyrie, Boland and Voisin, was known to the model flyers years before the above machines were put upon the market, and, in fact, is the type of machine that holds all records to-day.

In conclusion, therefore, I desire to state that those who take up model flying as a sport, will not find a more exhilarating sport, and those who take it up for the purpose of gaining knowledge, will find that there is something new to learn every minute, and they will never regret the time spent.

### Model Aero Club of Oxford

The Model Aero Club of Oxford, Pa., held a combination meet in Oxford on the day of July Fourth and a night Hydro Meet at Point Lookout. The night meet was one of the most interesting ever arranged as nearly all of the hydro flyers equipped their models with electric lights, the added weight not cutting down the flights to any noticeable extent. All the contestants entered were obliged to have lights lit at the start, during and at the end of the flight so that it was as fair for one as another.

The club suffered a great loss recently when a canoe carrying books and magazines to the new club house at Point Lookout turned turtle and lost its entire contents including all *Aerial Age* Magazines of 1915, from Jan. 1st to the present time. The accident was caused by a paddle breaking.



*The boys of Public School No. 7, Astoria, Long Island, and some of the model aeroplanes they have constructed under the direction of Mr. Hans Nordman, shop teacher in the public schools No. 7 and 14, Queens. This work is being fostered by Dr. Walter S. Goodnough, Director of Shop Work in the Public Schools of New York, and Miss Mamie Fay, principal of Public School No. 7, who are very much gratified at the splendid results obtained thus far. The boys are now turning their attention to power-driven models and expect soon to hold contests of their own and compete against other schools in New York City. Those in the picture are: Arthur Chapman, Walter Dabrowski, Vincent Pirola, Dominic Cattacia, Angelo Canali, Joseph Greenedge, Fritz Stahl, George Mapp, Stephen Whitcomb, Joseph Smith, Tony Motto, Harry Brown, George Brothong, Harold Hamlin, Julian Haberer, Frank Morane, Jack Hetherington.*





Aeronitis is a pleasant, a decidedly infectious ailment, which makes its victims "flighty," mentally and physically. At times it has a pathologic, at times merely a psychologic foundation. It already has affected thousands; it will get the rest of the world in time. Its symptoms vary in each case and each victim has a different story to tell. When you finish this column **you** may be infected, and may have a story all of your own. If so, your contribution will be welcomed by your fellow **aeronuts**. Initials of contributor will be printed when requested.

#### "Flock" of Cattle, a New Danger to Dirigibles, Brings Out Fact That We Need Less "Bull" and More Aeroplanes to Build Our Air Fleets

When you asked your artist to draw wings to the elephant, horse, cow, pig, barrel, chair, and *bon vivants*, which grace the heading of "Aeronitis," you undoubtedly thought you had "gone some." But apparently you only prophesied or depicted history. According to Mr. Carl Dienstbach, the writer on dirigibles, who was in Germany last year, and ought to know, flocks of cattle constitute a new danger to dirigibles. In the current number of the *Scientific American*, Mr. Dienstbach, in an article *re*. Captain Baldwin's navy dirigible, being built by the Connecticut Aircraft Co., tells of a narrow escape of a dirigible from a *flock* of cattle as follows:

"Parseval III, while availing itself of the frictional retardation of wind velocity next to the ground to make headway in a storm, once barely missed running into a *flock* of cattle with its ponderous car."

This is a terrible menace indeed, and the British authorities should worry over the possibilities of the German *flocking* cattle invading the British skies. On the other hand we should feel relieved. Raising, as we do, millions of heads of cattle, we need but put Luther Burbank in charge of the work of breeding the *flocking* kind. So we can look forward to having a host of flying *bulls* to pit against the air fleets of any power that may attempt to invade our skies.

P. S. The editor of *Aeronitis* states that the use of the word "bull" is unfortunate and takes away the news value of this story. He points out that the reason why we do not have adequate air fleets is that there has been too much of the "bull" element! He says that we need less "bull" and more aeroplanes. He is right.

#### The Composition of One Billion

Now that the aeroplane constructors are working night and day filling orders—and undoubtedly also filling their cash boxes—the composition of one billion becomes a matter of interest. The following definition is given in the *Times*: "You answer the inquiry made, a billion is a thousand million, written thus: '1,000,000,000.' While this is the usual use of the word 'billion,' it is not true that there are two methods of notation recognized by authorities—the French and the English? The French method, in common use, would term 1,000,000,000 a billion. The English method would term this number one thousand million, and

would write one billion thus: 1,000,000,000,000, holding that a billion is a million million. Textbooks in arithmetic will support this statement, and the Standard Dictionary is also authority for it."

#### The Aiglon of Versailles

An Aerial Vision in the Sunset from the Palace of Louis XIV

To the Editor of *The Sun*—Sir: The tramway trip to Versailles had been uninteresting enough. Of St. Cloud we had only a glimpse. The outside appearance of Sevres did not at all suggest the dainty output of its porcelain factory. The scorching July sun, the dust, the vile odors of our fellow travellers' *régie* cigars, soon tired us of the novelty of a trip on the *impériale*. The shady trees of the Place d'Armes, our destination, gave us the first inkling of what later was in store for us.

Time must have been moving swiftly. It was 3 o'clock when we entered the palace, and already the first bell sounded to remind us of the impending closure for the day. From the windows of the many galleries we had had fleeting glances into the park, but they had not suggested the grandeur and beauty of what we now, upon leaving by the rear doors, beheld.

As far as the eye reached, a fertile country resplendent in the satiated tints of the slowly setting sun; outstanding against the horizon, the symmetrically planted trees and bushes interspersed with statues; at our feet, large basins of water, also adorned with statues and groups; to the right and to the left, mysterious groves in whose shadows fauns and fairies seemed to live.

Bewitched by the unexpected sight, we were soon lost in reveries of the past. The reverential silence and the twilight resurrected the heroes and heroines who make Alexandre Dumas so dear to us. The elongating shadows of the statues and trees vividly painted the Arcadian scenes of the rococo period. We relieved the tragic episodes of Marie Antoinette's sorrowful career. We were no longer of this age, but under the spell of 300 years of French history.

The sun was now casting its last feeble rays upon these past glories, when within its vanishing orb an aiglon seemed to rise. Higher and higher did he soar, a befitting miracle to end the eventful day; but, oh, chagrin, an unaccustomed noise emanating distantly from the skies recalled us reluctantly from our dream world. An aiglon it was indeed, but an aiglon of the twentieth century, an aeroplane, whose appearance seemed singularly unsuited in the historic park of Versailles.

AUGUST STENDER.



"Upon my word, old chap, this is the first time I have brought down such a big piece of game!"



## CICERO NEWS

On Sunday afternoon there was but little flying because of the gusty high wind. Satan Day was the first one up. About 2:30 his baby Benoist was rolled out of the hangar and he immediately went up for a twenty-minute flight. The wind pitched the tiny biplane about ruthlessly and at times the machine almost stood still. The spectators were greatly relieved when he finally landed, but his only concern seemed to be that the high wind had kept him from going through his usual dare-devil stunts.

Castori went up a while later but made only one circle of the field as he had motor trouble. After he had the motor fixed he again ascended making some nice circuits of the field but upon landing he hit a rut and smashed his running gear. The damage was repaired in a day or so.

By evening the wind had almost died down and about 7:30 Pritchard made some nice jumps in Selleck's Nieuport.

Miss Stinson made her debut in her new looper and got away with some very nice hops.

Monday evening Miss Stinson circled the field several times. She seemed right at home in the new plane and made a very good flight.

Day was out about ten minutes Tuesday afternoon but had engine trouble. He started to alight in the corner of the field but as a number of children were playing there he had to stall and work his machine to the other side of the field, with the wind behind him. A buckle on his running gear snapped when a wheel hit a rut and caused the chassis to give way. The machine nosed over but no damage was done beyond breaking a propeller.

Castori was out later and gave some fine exhibitions. He made a flight with a passenger and the machine handled well.

The rest of the week there was little flying as the aviators were getting ready for their Fourth of July dates.

Wilson flew in Iowa in Hartman and Crutson's Curtiss. Castori flew two days in South Dakota. Hoover was in Indiana. Miss Stinson filled a date in northern Minnesota. Day flew in southern Illinois where he broke his wings against a fence when his engine stopped when he was only ten feet high and almost upon it. Crowds along the side kept him from turning. In Indiana, Palisaard made a nice flight in the Partridge tractor. He swiped off his chassis upon landing but the rest of the machine was but slightly damaged.

Hassell's Flying Boat, built by Chicago Aero Works, made a splendid showing on its first trial trip on Lake Michigan. It was greatly admired by members of the Milwaukee Aero Club and Milwaukee is its headquarters at present. A week's flying for Waukegan City is scheduled and great sport is expected in the way of passenger-carrying and exhibition flying.

The Chicago Aero Works is completing a tractor for Aviator Christensen, a well-known local flyer—and will start to build several more at once. One of these, on order, will contain special features which are expected to mark a big step in tractor designs.

## PUGET SOUND AERIAL NEWS

By Robert La Tour

Aviator T. T. Mareney flew with a passenger from Everett to Anacortes on June 26. The distance of 50 miles was made in 46 minutes, a light wind favoring him. It is interesting to note that though his flying boat was designed for a 90-100 h.p. motor, this flight was made with a 60 h.p. owing to a delay in the arrival of the larger engine. Accounts of T. T. Mareney published in the June 21st issue of *Aerial Age* of being on the Italian Aeroplane ship at Taranto, Italy, must be amiss or there is another Curtiss pilot by that name.

Gustav W. Stromer, the Tacoma aviator, broke all records for long flights in this vicinity, when on June 29 he flew from Tacoma to Port Angeles in his hydroaeroplane, a distance of 115 miles in two hours and five minutes. It is getting to be the real thing to make these little jaunts out here, but J. Hansen of Tacoma "slipped one over" on the bunch, when he made an afternoon call in his Stromer aeroplane on his aunt, who resides near the Seattle Municipal Bathing Beach, at Alki Point. Mr. Hansen remained a few minutes and then flew back to Tacoma.

## BENOIST NOTES

A new passenger-carrying flying boat has been sent down to the beach back of the Chicago Beach Hotel and has been flying over Lake Michigan daily. Jay Smith, the pilot, has been busy carrying passengers and making some nice flights. The boat was first sent to the old Benoist headquarters at Lincoln Park, but it was decided that the new location would be better so Smith flew it down there.

The factory is still very busy with no sign of a let-up. Indications are that there will be still more business within the next few weeks and the output will have to be still more increased.

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The new flying boat of George Cove, which is interesting aero enthusiasts because it has new patented stabilizing wings, will be given its initial try-out soon from the pontoon float of the Beechhurst Yacht Club.

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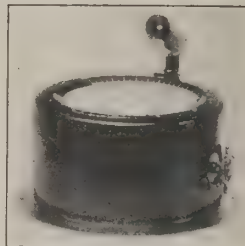
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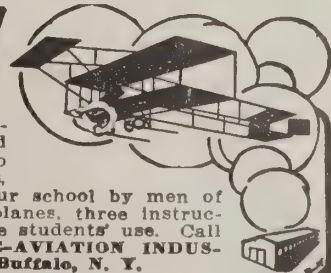
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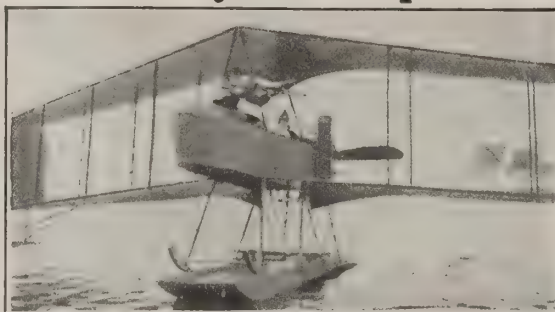


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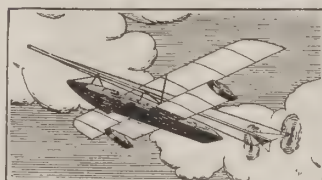
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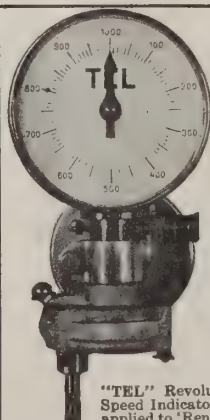
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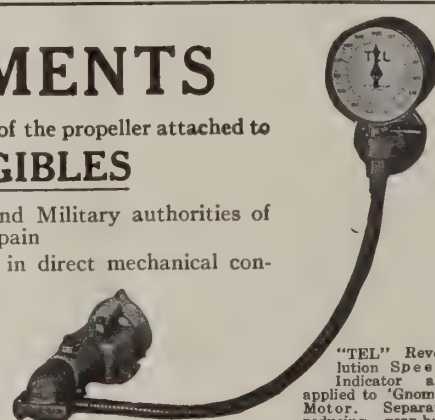
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# AERIAL AGE

## WEEKLY

Vol. I. No. 19.

JULY 26, 1915

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and Six Hundred Motors  
Shipped to Europe in Two Weeks**

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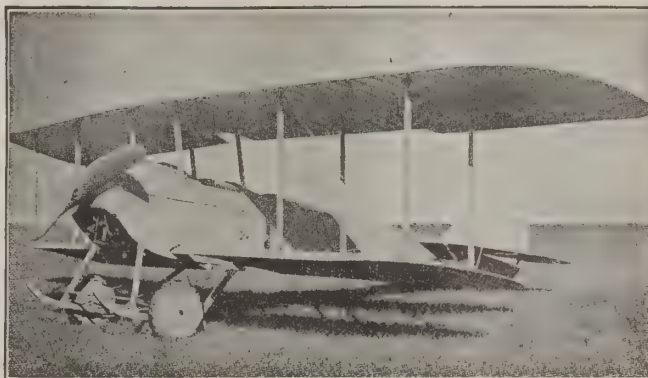
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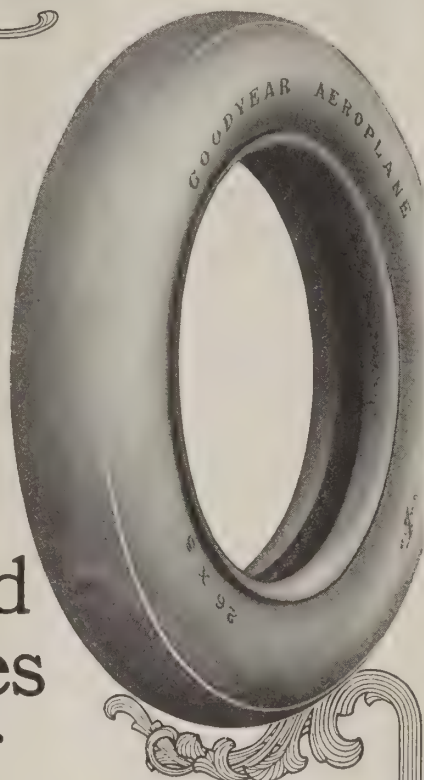
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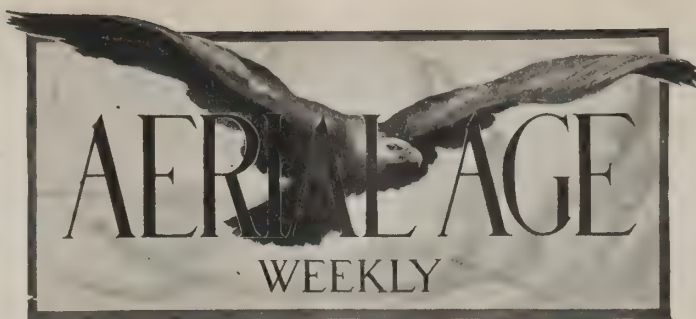
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PUBLISHED WEEKLY BY THE AERIAL AGE COMPANY, Inc., 116 West 32nd Street, New York City

Entered as Second-Class Matter March 25, 1915, at the Post Office at New York, N. Y., under the Act of March 3, 1879

VOL. I.

NEW YORK, July 26, 1915

No. 19

### 300 American Aeroplanes and Six Hundred Motors Shipped to Europe in Two Weeks

THREE hundred American-made aeroplanes have been shipped to Europe in the past two weeks. They represent part of the orders placed by different countries three months ago. The rest of the orders will follow.

Fifty of the machines, mostly tractors, went on the *Arabic*, and close to two hundred went on the White Star liner *Baltic*. The rest went on different ships. England, France, Russia, Spain and Italy get the bulk of these shipments.

About six hundred aero motors have also been shipped for the above mentioned countries.

This should convince the U. S. Navy Department that good aeroplanes and motors are available in this country, and there should be no further delay in the placing of the orders for twenty machines to supply the twenty officers who are now wasting their valuable time at Pensacola waiting for their turn to fly a few minutes on the only five machines in commission. The constructors have stated that they will give prompt attention to the Navy's order—unless the order is accompanied by impossible requirements that would involve the constructors in months of experimentation and extensive financial losses, as has been the case in the past. There is no excuse for such practice now. If American aeroplanes are good enough for actual warfare they certainly must be good enough for our Navy to use to train officers.

### One Thousand American Aeroplanes and Aviators for the Allies?

A despatch from Paris announces that plans are under way in the United States to organize aviation corps composed of American sportsmen and college men to go to fight with the Allies, and that the fund being raised will be large enough to provide one thousand aeroplanes and training five hundred aviators.

Just how much substance there is in this despatch it is not possible to ascertain. But we know that such a movement was proposed some months ago by some wealthy young Americans who had been in the habit of passing part of each year in Europe, and that if they should decide to carry the plan through they could subscribe large sums.

Several of these wealthy young men proposed to offer their services to the U. S. Government, to become

aviators and serve with either the Regulars or the Militia. But they thought that the Government should supply the aeroplanes, or at least pay the cost of operating them, and were disgusted when they found that the Government would do neither, and the states had no funds for aviation purposes. They only wanted to be connected with the air service and would not enlist in any other branch.

The possibility of participating in the struggle for supremacy in the air is alluring to young men. Scores have applied to the French and British authorities and have been refused. A few, like William Thaw, of Pittsburgh, Elliott C. Cowdin, of New York, Norman Prince, of Boston, and Frazer Curtiss, of New York, succeeded in getting in, and the reports of their exploits show that they did not join purely out of desire for adventure. Thaw has already earned the military cross; Cowdin has been promoted to the rank of sub-lieutenant having, among other things, brought down a German machine single handed. Hundreds of young men envy them and would join the aviation corps if they had the opportunity.

The Aero Club of America will make special efforts to make men so inclined join the National Guard and Naval Militia and co-operate with the Club in developing aviation corps for the Militia. But it is not possible to train them immediately and employ them as aviators. The method of developing aviation corps for the militia is to train first officers of the militia, who then take charge of developing the corps by adding volunteers. As none of the states have funds for aviation purposes the process of training officers of the Militia will be a slow one. The Navy Department has offered to train officers and then "loan" aeroplanes with which to start the corps. But the Navy's only aviation training school is at Pensacola, Florida, which is too far and expensive in most cases. Besides there are only five aeroplanes in commission at that school and there are already twenty naval officers waiting daily for the opportunity of making a flight.

If the suggestion made by the Aero Club of America to establish aviation sections at all important naval centers is followed, officers of the militia will be able to take their course of training without excessive sacrifice on their part and the organization of aviation corps for the Militia will be facilitated.

But this does not bring immediate relief to the situation and young men who are anxious to join the aviation corps, and who are needed in this country, will have to wait for developments. Let us hope that some way is found to enlist their services for the good of this country. We need them here.



### Why Should the Navy Department Want to Construct Aero Motors?

Of late there have been appearing news items stating that the Navy may take up the construction of aero motors. Here is one of these items, from the Washington, D. C. Star:

*"Several aeroplane motors have been bought by the Navy Department for experimental purposes and soon will be delivered for testing purposes, Secretary Daniels said, today. Until a type of motor satisfactory for navy use is determined upon, and it is known how rapidly they can be supplied, it is improbable, Mr. Daniels indicated, that the number of aircraft to be recommended will be fixed by the general board. The board will present its recommendations to the Secretary in September, and the estimates for Congress will be prepared in October.*

*"The latest navy appropriation bill provided \$1,000,000 for navy experiments with aircraft, and Secretary Daniels said this sum was being spent 'as wisely as possible' in finding the best type of aeroplane and other aircraft for navy use. The proposal that the government build its own airships, he said, had been considered, but until the type of motor best fitted for hydroaeroplane use had been settled upon, it was improbable any steps would be taken in that direction. If the makers of the motor finally selected are able to supply rapidly enough, Mr. Daniels said, the navy itself probably would not go into motor construction at present. The Pensacola yard, however, is now equipped to do 'important repair work' on aeroplanes, he added. It is understood that yard would be selected for motor construction if the government undertook to build its own engines."*

We do not believe that Secretary Daniels has been correctly quoted. The Navy Department is neither equipped nor qualified to construct aero motors. With only one naval aviation school, less than one dozen trained pilots; five aeroplanes in service and five ordered, the aviation section is too embryonic to permit even the consideration of the matter of constructing aeroplanes and motors. It needs to concentrate its efforts in training aviators and forming an organization with sufficient personnel and material to be of some service in case of need.

Let us not forget that we did not have any aeroplanes when the fleet assembled in New York and there are not any available for manoeuvres, therefore the fleets are entirely without the important air service, and in case of need this country would be in a sorrowful plight.

Suitable aeroplanes and motors are available—close to 300 have been shipped to Europe in the past two weeks for other navies, to be used in actual warfare. The constructors are waiting for the Navy to give its orders; the country is waiting to hear that the orders have been placed and the Navy is being provided with this potential means of defense. Why so much delay?

If these rumors are due—as were the rumors that the Navy was going to construct aeroplanes—to the efforts of politicians who would like to have the \$1,000,000 appropriation spent in developing land and building factories in their own districts, the Navy Department needs but make this known. The country is set on having an air fleet and will not tolerate any interference on the part of politicians.

The \$1,000,000 is barely sufficient to meet the immediate need for aeronautical equipment, and cannot be wasted on pork-barrel schemes.

If the Navy really is anxious to get better motors it can get them by holding the \$150,000 motor competition suggested to Secretary Daniels by the Aero

Club of America. The Navy Department cannot ascertain what motors are available by buying "several motors" to put through tests, no more than it has been able to ascertain what seaplanes American constructors can turn out by the recent "competition." Broader methods must be applied; which do not require financial sacrifices on the part of constructors and designers. Concerns are justified in taking a business chance, but they cannot be expected to continue to sacrifice—not now, when Congress has allowed the funds necessary to carry out the work on a business basis.

### New Navy's Advisory Council Favors Developing Air Fleet

The newly appointed Advisory Council of the Navy, composed of the heads of the important departments of the Navy promises to relieve the aeronautical situation in the Navy. At its second meeting it proposed the acquisition of twenty hydroaeroplanes and flying boats and belief was expressed that if American aeroplanes are good enough for European countries to use in actual warfare, they must be good enough for our navy to use for training aviators.

The Council is composed of the following:

Assistant Secretary of the Navy Franklin D. Roosevelt; Rear Admiral W. S. Benson, Chief of Naval Operations; Rear Admiral Victor Blue, Chief of the Bureau of Navigation; Rear Admiral Joseph Strauss, Chief of the Bureau of Ordnance; Rear Admiral W. S. Griffith, Chief of the Bureau of Steam Engineering; Rear Admiral D. W. Taylor, Chief of the Bureau of Construction and Repair; Rear Admiral H. R. Stanford, Chief of the Bureau of Yards and Docks; Rear Admiral Samuel McGowan, Chief of the Bureau of Supplies and Accounts; Rear Admiral W. C. Braisted, Chief of the Bureau of Medicine and Surgery; Major Gen. George Barnett, Commandant of the Marine Corps; Capt. Ridley McLean, Judge Advocate General of the Navy.

The Council will meet with the Secretary every Thursday and at such other times as may be necessary. By constituting an Advisory Council of statutory officers of the Navy Department who are responsible to Congress the Secretary believes he will secure better results than under the system of aids. "I have learned to rely upon the men who will compose this Council," said Secretary Daniels. "The bureau chiefs touch at first hand every unit (matériel, operation, personnel) of the Navy, and I have had almost daily conferences with them about the big problems in their bureaus. Of course, these will continue, but in addition the new plan will give at least formal weekly meetings for common council and interchange of views."

It is to be hoped that the suggestion of the Aero Club of America to hold a motor competition for the navy with \$150,000 in prizes and orders will be submitted to the Council in the near future. The Council would recognize the value of inducing twenty-eight motor builders to compete in developing efficient motors.

The Aero Club of America has received a contribution of \$1,000 to the National Aeroplane Fund from Mr. Emerson McMillin, the Wall Street banker. Mr. McMillin is greatly interested in national defense, and believes that giving aviation corps to the National Guard and Naval Militia of the states will be one of the most important steps in providing adequate national defense.

Contributions aggregating \$10,039 have been received by the National Aeroplane Fund. Of this amount, \$1,130 has been received within the past few days from the following:

Emerson McMillin .....	\$1,000
Mrs. Emma F. Slauson .....	50
Mr. A. L. Judson .....	25
Walter D. Denegre .....	25
Thomas R. Proctor .....	25
Herbert F. Schwarz .....	5



# THE NEWS OF THE WEEK

## Society Woman is Pupil at Wright School

Miss Rose Dougan, daughter of Dr. and Mrs. David Dougan, of Richmond, Indiana, is now a pupil in the Wright aviation school. She is one of Richmond's most prominent society women and a niece of Daniel G. Reid, of New York, former Richmond resident, but now one of the country's most widely known capitalists.

While Miss Dougan has been receiving instruction in the art of flying but a short time, Orville Wright declares she is learning rapidly and promises to become quite skilled in the art. She is already able to pilot an aeroplane, it is said, with a degree of skill that is remarkable considering the time during which she has been practicing.

## New Wright Flyer Arrives at Pensacola

A new Wright flying machine, just from the works at Dayton, Ohio, arrived at Pensacola on July 8th, occupying an express car. It was switched to the tracks of the Bayshore line and moved to the aeronautic station. Arriving also was one of the aviators attached to the Wright works, who will assemble the machine and give it the required tests before it is presented to the navy for acceptance.

The machine is of the latest type and is slightly larger than any of those now in use at the station.

## 197 Aeroplanes On Liner

Baltic Sails with Aeroplanes Valued at \$600,000

An indication of the extensive aerial warfare to be carried on by the Allies, and particularly the British, was indicated by the manifest of the White Star liner Baltic, which sailed yesterday for Liverpool with a record cargo of war supplies. The big ship carried 197 aeroplanes, the estimated value of which is at least \$600,000.

Most of these machines were consigned to the British Government, but there were also many in the list for France. It is thought that the British aeroplane corps is to be brought up to record dimensions.

Other items on the manifest were: 154 autos, 6,009 packages of steel, 9,712 steel billets, 6,005 cathodes copper, 6,386 ingots of copper, 5,900 cases of cartridges, other ammunition and a small consignment of small arms.

## Cowdin Wins Fame In Air

New York Polo Player Single Handed Destroys a Taube

Paris, July 16.—Elliott C. Cowdin, polo player in New York, Harvard '09, has been promoted to the rank of sub-lieutenant and mentioned in the order of the day for bravery. It is said that he destroyed a Taube in a midair battle near Verdun. Cowdin, without a pilot, went up after the German aeroplane and, operating his machine with one hand while he manipulated a machine gun with the other, managed to hit the motor of the enemy, which brought him to earth a prisoner. Cowdin's machine was badly crippled, it is declared, but he landed safely.

Cowdin, who is the son of Mrs. John E. Cowdin of New York, with five other Americans, in March formed the American Aviation Corps of the Foreign Legion. William Thaw, who has been mentioned in despatches for bravery, is another. They have long since become a part of the French Aviation Corps and all of them have won distinction for daring.

## Russian Machines to Have Two Motors of 160 H.P. Each

Lieut. Gregoire Piotrowsky, the representative of the Russian government, is back to New York from Buffalo. The Russian government has placed an order for two flying boats of the *America* type with the Curtiss Company but the motors instead of being the 90 h.p. type will be the 160 h.p. type.

## Advisory Committee Holds Third Meeting

The Executive Committee of the National Advisory Committee for Aeronautics held its third meeting on the afternoon of the 8th instant. The Committee approved of contracts with several prominent institutions for reports on matters of interest relative to aeronautics, which are to be submitted to the Advisory Committee at its next annual meeting. These reports will cover the subjects of the behavior of aeroplanes in gusts, by the Massachusetts Institute of Technology; the possibilities in design of mufflers, by Cornell University; the aeronautical qualities of different fabrics used in the construction of aeroplanes and dirigibles, by the U. S. Rubber Company; the present status of internal combustion engine design with relation to aeronautics, and the means of improving their performance, by Columbia University; also the question of safe and reliable means of making the terminal connections of the aeroplane truss wires, by John A. Roebling's Sons Co. This latter will be a voluntary contribution.

Owing to the limited funds at the disposal of the committee, many other important subjects of similar nature cannot be investigated until a later date, but in the course of making the contracts referred to, it was found that a number of manufacturers and other institutions are already engaged on important investigations and are ready to co-operate with the committee.

A sub-committee, of which Professor Marvin, Chief of the Weather Bureau, is chairman, has been assigned to the investigation of the problem of the atmosphere in relation to aeronautics, which it is believed will result in important discoveries and information with relation to atmospheric disturbances.

Inquiries are being made as to the facilities of the various departments of the Government, and various institutions, for the prosecution of investigations of important aeronautical problems, so that at the earliest practicable date important investigations may be obtained with facilities already existing.

The Executive Committee holds monthly meetings and, with the facilities available, is rapidly getting information which will enable it to present a comprehensive report to the Advisory Committee at its regular meeting in October.

## Ten More Students Arrive at Curtiss Toronto School

Ten more students and two more machines arrived at the Curtiss Aviation School at Hanlan's Point recently. Two of the machines that have been in use since the school was opened were again out on July 9th, the flights being made over the lake. The different flights which have taken place in the past week or two have been made over the bay, but a choppy, uneven wind made the lake flying more advisable on July 9th. A "tractor," is one of the two new machines added to the fleet. There are now thirty students at the Island aviation school.

*The Thomas Military Tractor. A large order for machines of this type is being delivered to the British Government*







*Christofferson Tractor bought by Carranza, and now doing service at Agna Prieta. The centre figure is Lawrence M. Brown, pilot. Three of Villa's men were shot for trying to destroy this aeroplane*

#### Lansing Callan Honored by Italy

MILAN, Italy, July 13.—John Lansing Callan, a representative of the Curtiss Aeroplane Company and brother of former Assemblyman Albert S. Callan, author of the Callan Automobile Law, has been awarded a gold medal by the Italian Government. Mr. Callan is now on his way to New York.

Mr. Callan was sent to the Azores a year ago to establish a supply station for the great flying boat *America*, which was to attempt a transatlantic flight, Lieut. John C. Porte, R. N., as pilot. The enterprise was financed by Rodman Wanamaker.

The Italian Government honored Mr. Callan because he has done excellent work at the Naval Flying School at Taranto, where he instructed the Italian naval officers in flying.

#### Goodale Pays His Annual Visit to Broadway

It wasn't London at all, really, you know, old dear. It happened right in New York—a blooming sausage of a sort of a Zeppelin looking thing, which soughed across the Hudson at hawf awfter eight one night recently touching above the shore at Sixty-eighth Street and then quite boldly assuming a position directly over Broadway and skimming southward at an altitude of some 500 feet until the doughty dirigible hovered over Long Acre Square. There it circled for some twenty minutes, while the aviator, Frank Goodale, popped confetti bombs upon the Gladway of the great metropolis.

Lots of people in the big restaurants stopped their dinners and ran out, napkins on arms, to gape at the flyer.

#### Gilpatric Makes Record for Teaching at Curtiss Toronto School

Lieut. Homer Smith, formerly of the Q.O.R., and Mr. Strachan Ince, son of Mr. Wm. Ince, Jr., and a brother of Lieut. Ince, of the 35th Battalion, passed their tests and secured their pilot certificates for aviation at the Rifle Ranges, Long Branch, recently. Both men immediately left for Ottawa, where they will report to Vice-Admiral Kingsmill, and then will be given first-class passage to England, where they will enter upon active aerial service. The tests were made in the presence of Captain Ross Hume, of the military wing of the Royal Flying Corps, and Mr. A. S. Penton.

In qualifying for their certificates, both students flew the Curtiss J.N. 3 machine alone, and in flight circled in their figure eights, and landed in the field within a given mark, cutting off their engine 300 feet in the air.

Several other students will likely make the test flights the early part of this week for their certificates. Each man qualifying secures his commission before leaving for England, is given passage from here, and his pay commences from the time he is accepted.

Gordon Stephens, Mr. Potter, Mr. Logan, Mr. Henderson and Bert Wemp graduated from the watercourse flying boats, and will go on to Long Branch for land training.

Pilot J. Guy Gilpatric broke the school time record for training recently when he flew for six hours and a half. He was this time in the air, and during the day had his five pupils graduate. Five new students were immediately placed in his class from the waiting list, including Lieut. Hughes, of the Royal Navy, who is in Toronto inspecting the machines being built for the British Government by the Curtiss Aeroplanes and Motors, Limited, Strachan Avenue.

Pilot T. E. Macauley's new flying boat was tested out. With the mechanic aboard, Pilot Macauley rose to an altitude of 2,200 feet, and flew directly over King Street from the east end of the city almost to the Exhibition Grounds, where he turned out over the lake.

Three boats are now at the island school with 30 students under instructions. Ten are training under Pilot Vic. Carlstrom at Long Branch, and more than ten are on the waiting list to commence land training.

#### United States Navy's New Fleet of Airships

The first of the proposed fleet of dirigibles for the United States is now under way and the important order for the balloon fabric has been awarded to the United States Rubber Co. The work of constructing the fabric, which requires much skill and care in manufacturing as the success of the airship depends largely on the strength and capacity of the envelope, is now in progress at one of their large factories.

It is regarded as a tribute to their leadership in the rubber industry that the United States Rubber Co. was selected to supply one of the most important necessities for this new "dreadnought of the air."

The airship is being built by the Connecticut Aircraft Company of New Haven, Conn. Capt. T. S. Baldwin, Chief Constructor of the Connecticut Aircraft Co., supervised the building of the first dirigible, and the only dirigible ever owned by the United States Army, and he decided that the United States Rubber Co. was the best equipped to make the balloon fabric for the important navy airships.

The large envelope will be of a new and improved shape, which by test has been proved to offer a minimum wind resistance and when filled with gas will have a large lifting capacity. This airship when completed will be shipped to Florida where it will be tested.



*Curtiss Training Machine at the Curtiss Aviation School, San Diego*



### Mayo-Vought Military Biplanes to be Manufactured by the Simplex Aircraft Co.

The splendid Simplex Military Biplanes which have heretofore been flying under the mark of Mayo-Vought, are now being manufactured by a strong company of leading aeronautical men and New York capitalists in what is undoubtedly the finest and most up-to-date factory in America devoted to the production of high-grade aeroplanes, motors and parts.

The Simplex Aircraft Company was incorporated in New Haven last week with a capital stock of \$300,000, of which \$160,000 is paid in. The officers and directors of the new company are V. J. Mayo, *president*; Chance M. Vought, *secretary and technical director*, and R. Stephenson MacGordon, *treasurer*. The company has taken over the properties in connection with the development of the Mayo military biplanes and flying-boats and will continue the production of these machines in quantity.

Two other types of military aircraft will be offered, so that three models, each for distinct usages, will be put out to meet the latest demands for military aircraft. These two new types, like the first Mayo-Vought reconnaissance machine, have been designed by Mr. Vought, the company's aeronautic engineer, and are, respectively, a 110 mile-an-hour Single Seater Scouting Biplane and a 175 Horsepower Fighting Machine of the pusher type, now coming through.

It is reported that the Simplex company have undertaken to build a large quantity of the Scouts and Two-Seater Reconnaissance types for a foreign government, most of which will be powered with Mayo motors of 100 horsepower. A new factory site has been obtained, though it is planned to utilize part of the mammoth Mayo radiator plant for immediate operations.

We hope to give further data regarding these new American Military Aircraft and to run a description and photographs of the new Scout and Gun-Carrier which are now coming through the shops. It is interesting to note that the high-speed Scouting craft is a modification of the challenging aeroplane designed by Mr. Vought for the Aero Club of Illinois (of which he is the Consulting Engineer) entry in the 1914 James Gordon-Bennett Aviation Trophy Competition, which entry was made by Mr. Chas. Dickenson, president of that organization.

### A Record of Performance and Reliability

Probably one of the most unique records yet credited to any aeroplane is the record of performance, reliability and correctness of design as evidenced by the Simplex Type "A" Reconnaissance Tractor Biplane designed by Mr. Chance M. Vought and flown by Steve MacGordon at New Haven, Conn., and the Garden City Aerodrome. This machine was described and illustrated in Vol. I, No. 8 issue of *Aerial Age*.

This splendid machine was constructed at the factory in New Haven and made its initial flights on the morning of May 14, out of the Yale baseball field. It was then shipped to the Aero Club of America's flying field at Garden City and has been a continual and esteemed sight to enthusiasts ever since.

So pleasing was its appearance and so striking its wonderful flying qualities that immediately numerous representatives of foreign governments asked for demonstrations. And a unanimous verdict of "quite one of the finest aeroplanes of its type, aerodynamically and mechanically, we have ever seen" followed these severe and numerous tests.

Flying with this Simplex craft seems solely to be tanking up the machine, cranking the motor and flying until the pilot tires

of the fun. Not once has the Model K Gyro motor stopped in flight, and the routine of flight work seems destined to be unbroken for some time to come.

The remarkable feature of the Simplex machine, aside from its really great flight performances and general reliability, is that no changes have ever been made from the original shop blueprints to the well-tried machine as it stands today, with the exception of new and larger fuel tanks and a new design Flottorp propeller which brought the maximum speed up to 83.5 miles per hour, as determined in the tests conducted by the English representative.

To date this particular Simplex Two-Seater has made 134 flights since its maiden flight on May 14, 1915, MacGordon on many occasions loading the machine far above its designed capacity and putting it through all manner of difficult manoeuvres in all kinds of weather. After all this continuous work not a single wire, strut, or other member has broken or shown signs of inharmonious or deterioration and not a component part indicates the desirability of re-design or replace from the effects of hard usage. In fact, control and chassis wires have hardly been tightened after this consistently severe abuse to which the machine was subjected for the sole purpose of bringing out its weak spots.

The many pilots and experts who have enjoyed rides in this new American military biplane have all been deeply impressed with the great ease of handling and range of control which make this craft a delight to operate, and have been very free in their favorable comments on its premiership. Its great reserve power enables the pilot to put this big tractor through evolutions and manoeuvres heretofore associated only with "stunt" exhibition machines.

Official results of tests recently conducted by several foreign representatives credit the machine with consistent speed averages of 83.2 miles per hour maximum, a climb of 3,650 feet in 7 minutes whilst carrying a load of over 645 pounds and a slow speed of approximately 40 miles per hour. Pilot and passenger were aboard on all the tests. The most efficient gliding speed of the machine is 62 miles per hour with the gliding angle given as 1-in 7.28. As nearly as could be determined the best air-speed for a full load quick climb was 56 miles per hour.

### George A. Gray Flies For New York National Guard

In order to be sure of having an aeroplane for the use of the National Guardsmen at Camp Whitman, Fishkill Plains, the Aero Club of America sent Aviator George A. Gray, with a Wright biplane. Mr. W. S. Luckey, who had offered his services and the use of his Curtiss biplane, through the Aero Club of America, and whose offer had been accepted by the Adjutant General, found that a number of engagements in the south would keep him busy until some time next week. To avoid delay, and to enable the Militia to have the services of an aviator and to manoeuvre under conditions closely approximating modern warfare, the Aero Club of America arranged with Gray to take Luckey's place.

George A. Gray is one of the veteran Wright pilots. He has 1,500 flights to his credit—and no accidents. He has flown at dozens of fairs, and has made several cross-country flights, the most notable being one of 244 miles soon after his graduation from the Wright school.

Mr. Gray, having flown in the locality of the present Camp Whitman, and being familiar with that territory, will be of assistance in assisting the authorities to carry out the war game

(Continued on page 454)

Stephenson Mac Gordon starting out for the altitude record with a passenger





# AEROPLANE ENGINES\*

By Neil MacCoull, M. E.

Continued from Page 427, July 19, 1915

## Gnome (French)

This air-cooled revolving engine, which is now so well known in aviation circles, is very similar to the old Gyro just described, and owes most of its success to its marvelous workmanship. The exhaust valve is in the head of the cylinder, and the intake, which is entirely automatic, is in the head of the piston. This valve is, of course, counterbalanced so that it is drawn to its seat by centrifugal force, no springs being used. Each exhaust valve is operated by an individual cam, all cams being side-by-side on a single sleeve around the shaft. The cylinders are lubricated by oil which is sprayed into the crankcase and thrown outward by centrifugal force. Since the cylinders and pistons are of steel, they require a great deal of oil. Much of this oil passes through the intake valves and is the cause of the high oil consumption of these engines.

## Monosoupape Gnome (French)

A new Gnome has recently been marketed, known as the Monosoupape, or single-valve engine. As may be seen from Fig. 11, the cylinders are extended for some distance within the crankcase which is filled with a very rich fuel mixture, and

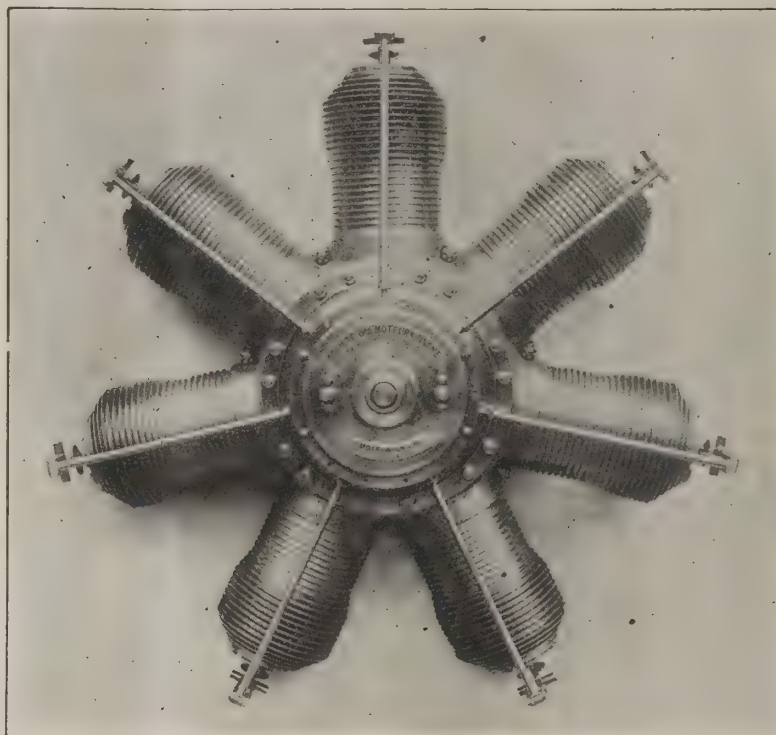


Fig. 10.—The Seven-Cylinder Gnome

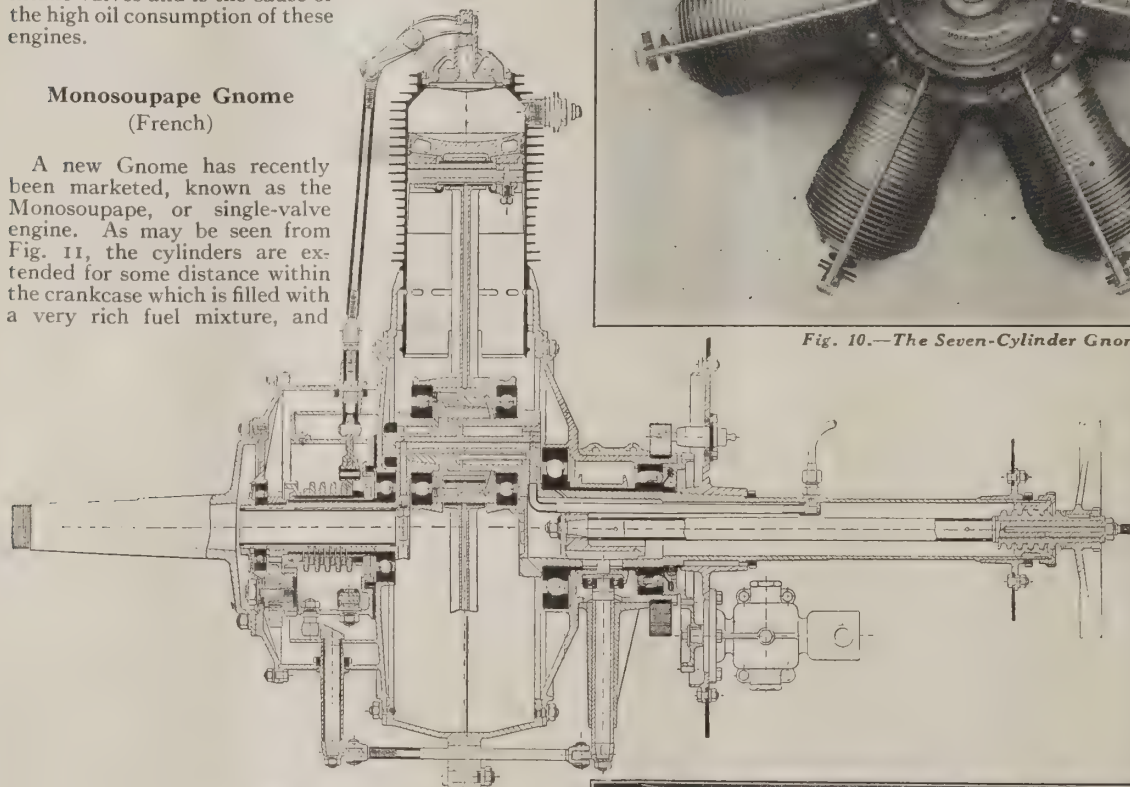
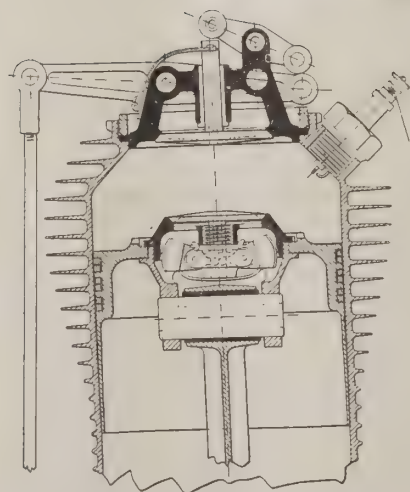


Fig. 11.—Cross-Section of the Monosoupape Gnome, Showing Mechanism for Advancing or Retarding the Cams



Cross section of a cylinder of the standard Gnome engine, showing the inlet valve in the piston, and the two counterweights which hold it to its seat

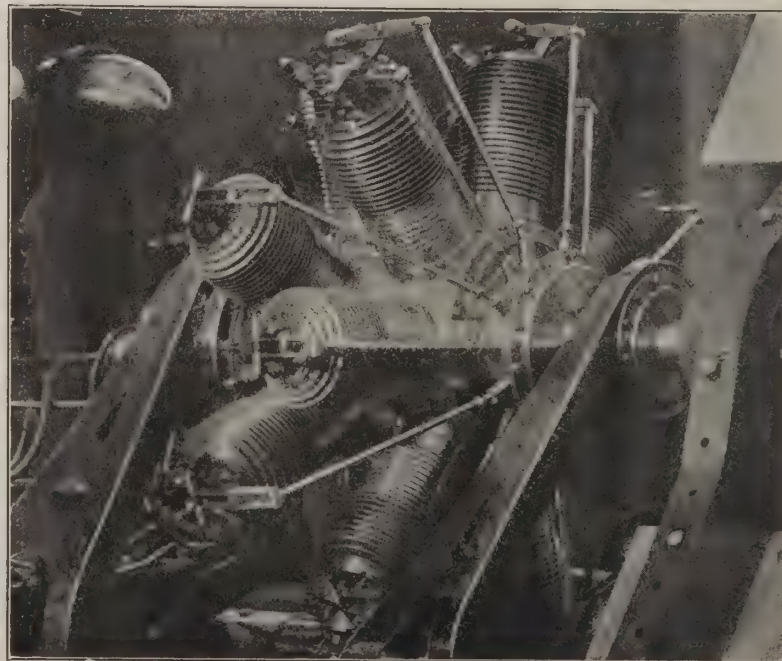


Fig. 12.—Fourteen-Cylinder Gnome Connected to a Fan Brake

\*A paper presented before the Society of Automobile Engineers, June, 1915



through these extensions ports are cut at such positions that they are uncovered by the pistons toward the end of the power and suction strokes. The exhaust valve opens sufficiently early on the power stroke to allow the gas pressure to drop near to that of the atmosphere before the intake ports are uncovered, so that there will be but little tendency for any gas to pass in either direction through the ports at the end of this stroke. The gas mixture in the crankcase is so rich that there is no possibility of back-fire. On the suction stroke the exhaust valve remains open long enough for the cylinder to be nearly filled with fresh air.

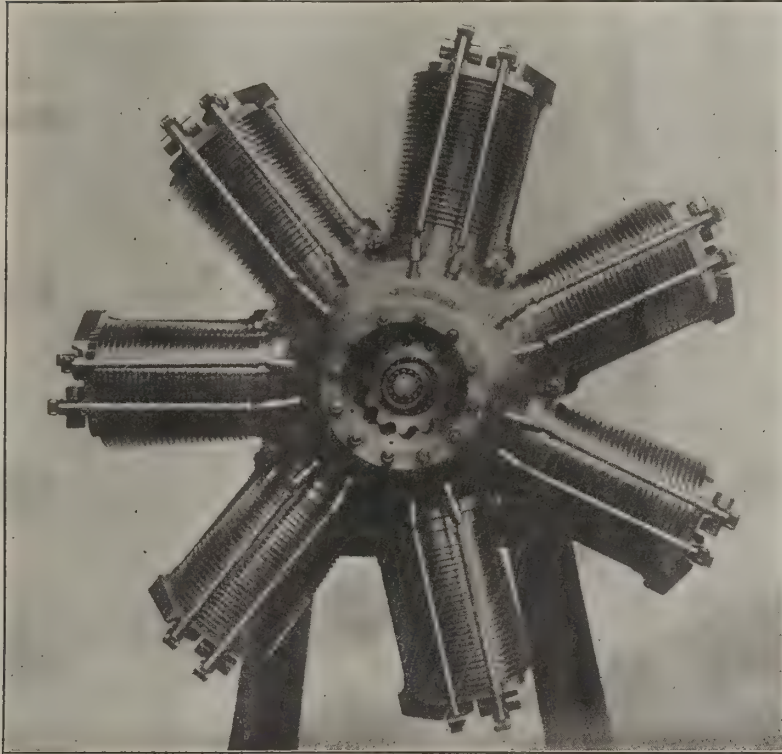


Fig. 14.—50-60 H.P. Clerget Revolving Engine Showing the Gearing by Which the Spider in Fig. 13 Is Rotated

The valve is closed in time to cause the pressure to drop below atmospheric and draw in a charge of the rich gas when the intake ports are uncovered. This charge mixes with the pure air already in the cylinder, forming a combustible mixture, which is compressed and ignited as usual. It should be noted that the use of a muffler is impossible, and that the exhaust valve has to open against pressure, which is not true of the Gyro-Duplex. Lubrication is force feed throughout, which greatly reduced the oil consumed when compared with the other Gnome engines.

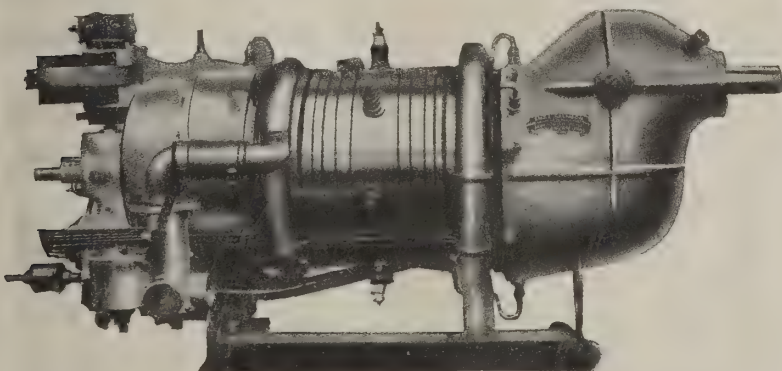


Fig. 19.—The 55 H.P. Seven-Cylinder Salmson with Parallel Water-Cooled Cylinders. This engine is similar in principle to two Macomber engines placed head to head so that two pistons are contained in each cylinder, one spark plug and one set of valves for each pair of pistons. This secures a perfect balance which would be difficult otherwise as the cylinders are stationary

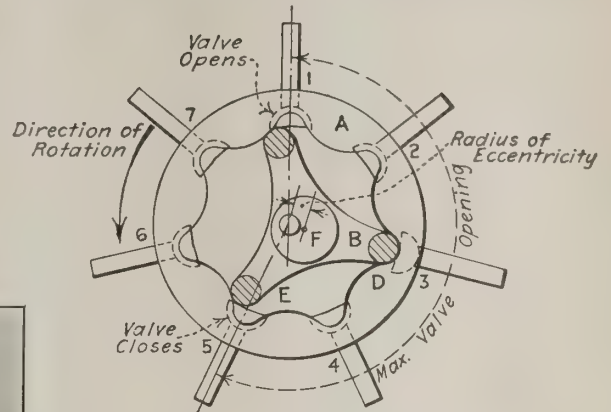


Fig. 13.—Cam Mechanism of the Clerget

#### Clerget (French)

The valve mechanism of this engine, which is very unique, is shown diagrammatically in Fig. 13. A triangular spider *B* rotates eccentrically within an internal cam *A* of peculiar shape. As the spider rotates, the rollers (*C*, *D*, and *E*) which it carries, slide in and out of the recesses in which the valve tappets are located, thus opening and closing the valves. In the figure, valve 3 is shown wide open. Valve 5 will be the next to open, and then valve 7. Thus it will be seen that every other valve is opened in succession, and that two complete revolutions of the engine are required before any one valve is opened a second time, giving the proper action for the four-stroke cycle. The spider is held in proper relation with the internal cam by means of the internal gear with fourteen teeth, and the spur gear with twelve teeth shown in Fig. 14. This valve mechanism is used for one set of valves only, such as the intake. A duplicate mechanism is used for the other set of valves.

#### Trebert (American)

This engine is in reality a group of six single-cylinder engines arranged about a central shaft, with their

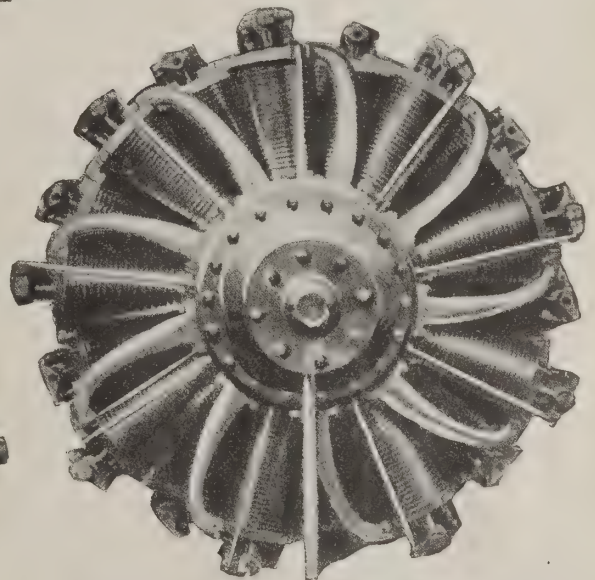


Fig. 42.—160 H.P. Eighteen-Cylinder Le Rhone Engine. Both valves are operated by one rocker, and a "push-and-pull" rod. Cast iron liners are shrunk into the cylinders

cylinders parallel, and their crankshafts extending radially from the central shaft. The ends of these individual shafts may be seen in Fig. 16. At the inner end of each shaft is a small bevel gear which engages with one central bevel gear of twice its diameter. The central gear is held stationary, the cylinders being allowed to revolve, thus assisting the air-cooling of the engine because of the blower action while revolving.

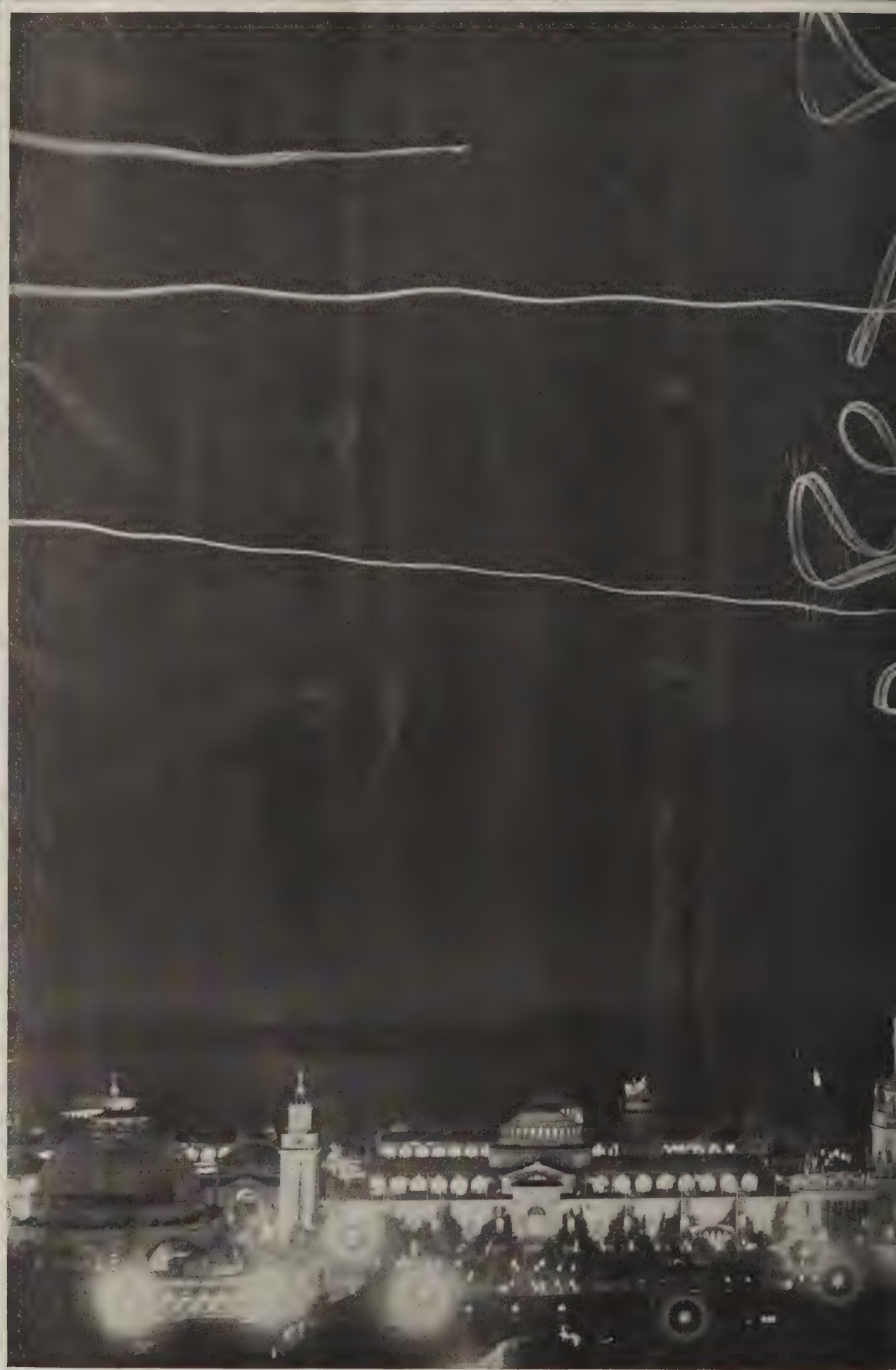
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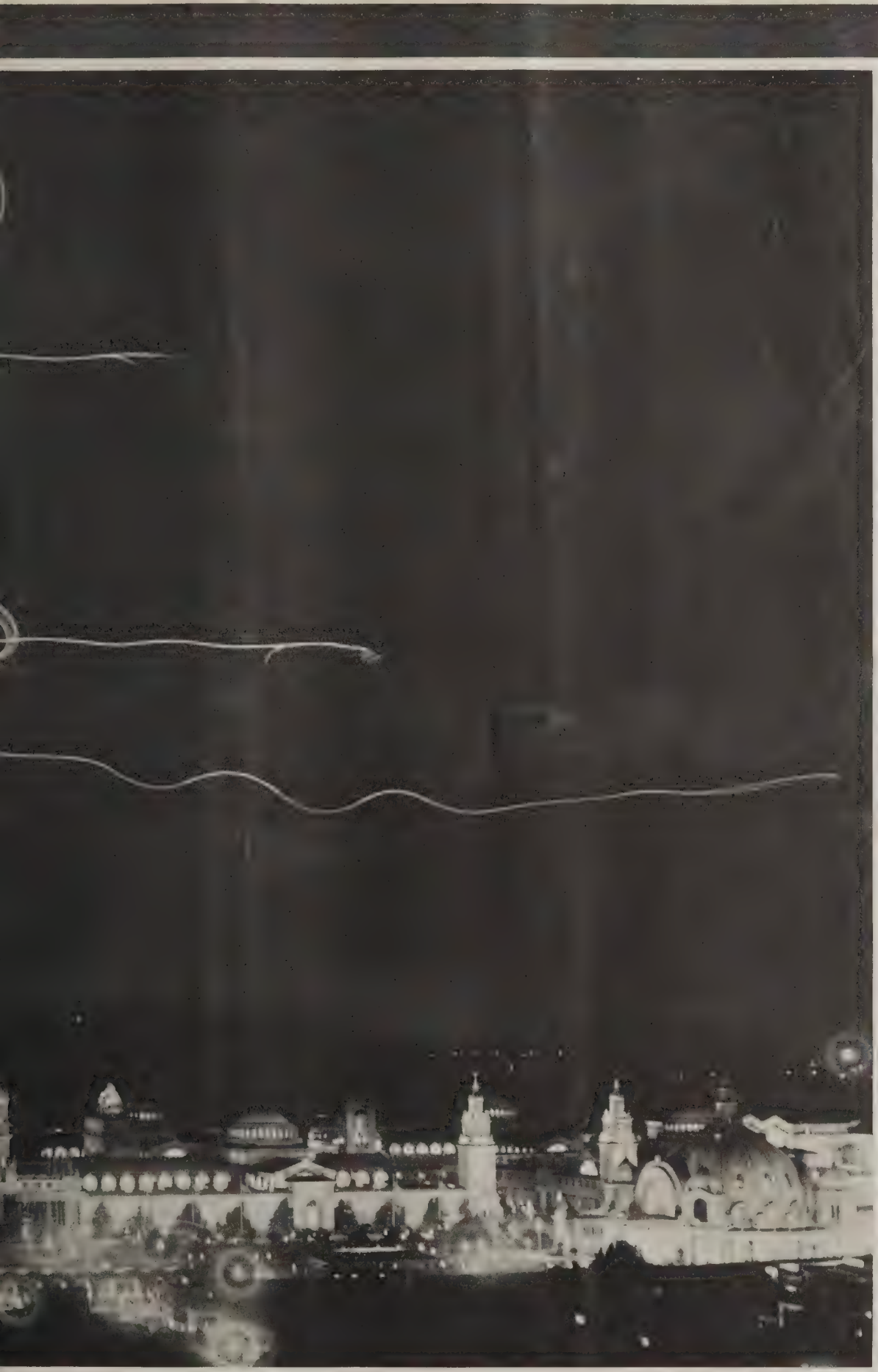
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*San Francisco Exposition: Looping the Loop at Night*



**George A. Gray Flies For New York National Guard***(Continued from page 449)*

most effectively. After the Fishkill Plains manoeuvres, Gray is scheduled to fly for the Vermont National Guard, at the state reservation adjoining Fort Ethan Allen, from August 2 to 11.

Captain LeRoy A. Hall, of the Vermont National Guard, had written to the Aero Club of America, saying that if an aviator could be sent to the annual encampment it would awaken interest among the 1st Infantry and the Cadets of Norwich University and could render valuable services in the manoeuvres. Mr. Gray, who once made a flight from Plattsburg, New York, to Burlington, Vermont, and who is familiar with the topography of the country where the manoeuvres are to be held, was selected, and will ship his machine to Vermont at the conclusion of the Camp Whitman manoeuvres.

**Thomas News**

The Thomas Bros. Aeroplane Company has recently received an order from the United States Government for the construction of two hydroaeroplanes.

The Thomas Bros. are unwilling to divulge the details of the specifications except that these machines are to carry motors of 140 h.p.

The Thomas Bros. were in competition with all the leading firms and the fact that they landed this order speaks well for the reputation of their engineers and aeronautical constructive ability.

**PUGET SOUND AERIAL NEWS**

By Robert La Tour

DeLloyd Thompson and Barney Oldfield on July 2 and 5, gave Tacoma their combined aeroplane and auto exhibition that will not soon be forgotten.

It was the first time this section had seen any aerial capers and Thompson gave it to them "a plenty." He looped-the-loop several times each time up, also the side-roll, flip-flop, stalling and diving. He gave the spectators an added treat by playing an aerial game of hide and seek by darting behind some low hanging clouds.

Aviator Stroman again broke the record for this section for length of flight in an hydroaeroplane with passenger when, on July 7th, he flew back from Port Angelas, after filling an engagement there, to Tacoma. Several fog banks were encountered on the trip and many stops were made until these lifted. The machine also faced a strong head wind at times, but plugged right along, completing the trip of over a hundred miles in three hours and a half including the stops.

**Military Aviation News**

A new water hangar is being constructed to house the Burgess-Dunne (S. C. Aeroplane No. 36) which will be equipped with pontoons and assigned to hydro duty. The machine will be used for experimental work in connection with Coast Artillery service. Plans are now contemplated for further extension and development of the hydro organization.

Two new OX motors and two new Martin machines type TT (Military Tractor), have been ordered delivered on July 1st for the training department. At the present time there are 13 student aviators (officers) and 8 enlisted men under training.

Lieut. Chapman flew from North Island to Long Beach, June 16th, piloting S. C. Aeroplane No. 37; Lieut. MacDill flew the machine back on his official J. M. A. 90-mile cross-country flight on June 17th.

Mr. Raymond V. Morris, Chief Pilot and General Manager of the Curtiss California Company was married to Miss Grace Gibson at Coronado, California, Saturday, June 12th, at noon. The bride and groom departed that afternoon for Los Angeles and the following day left for a honeymoon trip to New York.

Lieutenant Grigor W. Piotrovsky, of the Imperial Russian Aviation Corps, is one of the many foreign officers who have come to this country since the outbreak of the Great War for the purpose of passing orders for war supplies.

Lieutenant Piotrovsky, who is staying at the Aero Club of America, is naturally chiefly interested in his branch of service, aviation, and he has already paid numerous visits to American manufacturers of aeroplanes and motors in order to gather information useful to his purpose.

**Any Old Boat Made as Good as New**

If the frame is fairly strong the condition of the planking doesn't matter. Just cover with canvas attached with Jeffery's No. 7 Black Soft Quality Marine Glue. Note below, the result obtained by one of our customers as stated in his letter recently received:

"Some time ago I covered a wooden clinker boat with canvas laid in your glue and it has given perfect satisfaction, having held the canvas so closely to the wood that you would never think it was covered with canvas unless you were very close to it.

"This boat was a clinker cedar boat twenty-five years old and there didn't seem to be a possible chance to stop it leaking, but it was such a light rowing boat and one of the best shapes on the river that I hated to let it go. This boat belonged to another person and he allowed me the exclusive use of it if I would fix it up. Result—some of your glue and enough canvas to cover it ironed on with a hot flat iron, and it hasn't leaked a drop since."

**GARDEN CITY NOTES**

With the exception of the passenger-carrying flights of Stevenson MacGordon activity at the aerodrome during the past week has been chiefly confined to school work.

Millman in the Gallaudet dual-control school machine has been out practically every day giving pupils instruction. He now has nine pupils undergoing instruction, several of whom will soon be ready to try for their license. A number of new pupils have enrolled and another machine will be added to the school equipment.

At the Heinrich school training has been going on regularly, the pupils being out practising morning and evening under instructors Arthur Heinrich and George Page.

Stevenson MacGordon has been continuing his passenger-carrying work in the 90 h.p. Simplex tractor (formerly Mayo-Vought) carrying as passengers during the week his mother, Mrs. C. H. MacGordon, Mr. J. Stephenson, Mrs. Walter Scheffel, and Mr. and Mrs. L. d'Orcy.

**CALIFORNIA NEWS**

Silas Christofferson is constructing a 120 h.p. motor which will soon be finished. He is planning to shortly fly from San Francisco to San Diego in one of the new Christofferson tractors.

Bob Fowler has given over his concession of passenger-carrying at the Exposition after losing two flying boats, entirely wrecking them in landing.

Harvey Crawford is trying out his biplane daily at the beach. He contemplates passenger-carrying during the summer.

Joe Boquele, one of the Christofferson pupils, has been doing some wonderful flying. He expects to loop within a few weeks, and the Christofferson Company is building him a special looper, tractor type.

Harry Christofferson is doing a tremendous amount of flying from the Christofferson hangar, located on the beach. There is always a steady wind, if any, and scarcely a day comes that Harry does not make from ten to fifty flights. He has charge of the school as well as doing all of the passenger carrying. He has established a splendid business, because he has never had the slightest accident during these many thousand miles of flying. One motor alone has made over \$45,000 for him in passenger-carrying, including a small amount of exhibition flying.

Art Smith is using a Curtiss motor with one of our propellers and is doing some splendid work at the fair. His Kirkham motor is being repaired. It had a broken crankshaft.

**Charles E. Lucke Retained By Advisory Board**

We are gratified to learn that Dr. Charles Edward Lucke has been retained by the Advisory Board as their aeronautical engine expert. Dr. Lucke is head of the mechanical engineering department of Columbia University and is one of the foremost gas engine experts in the country. At present he is preparing a report on the present status of the aeroplane engine in this country and abroad, and will make suggestions as to means by which our government may secure engines which will be more able to meet the exacting requirements of aeronautics than any which are now procurable.

Judging from the type of work Dr. Lucke has done in the past, and the preparations he is making at present, this report will be filled with material and suggestions of great value.

If the other branches of aeronautics are handled by men as competent in those lines, we shall have no reason to fear that aeronautics is being neglected by our government at present. When the best brains of America are concentrated on a problem which is appreciated as urgent, the result is usually a product which Americans are not ashamed to compare with a similar product "made in Europe."

**Balloons to Start from Kansas**

Wichita, Kansas, is to be the scene of the national balloon race. Such was the announcement by Walter P. Innes, chairman, and Edward F. McIntyre, manager of the Wichita fair and exposition, upon their return from a trip to Chicago and eastern cities.

Such aeronauts as Captain Bumbaugh of Columbus, Ohio; Captain Coey, the Chicago millionaire, and Clifford B. Harmon, of New York, will fly from Wichita in an effort to set a long distance record for amateur balloonists. A score of men who have participated in other national races are being invited to come to the Peerless Princess.





# Foreign News

Edited by L. d'Orcy



## Belgium

On July 15 British aeroplanes destroyed a German munition depot near Rollegem. They also dropped seven bombs on the Menin Casino, where several German officers were killed. The aeroplanes all returned safely to their base.

## France

With reference to the German report that up to June 22 the Teutonic Allies had brought down 136 allied aeroplanes, (57 French, 47 British, 26 Russian and 6 Belgian) Mr. Jacques Mortane, the well-known aeronautic writer now serving with the French Aviation Service, states on good authority the number of German aeroplanes destroyed on the Western battle line. These figures which cover only the first four months of the war (Aug. 2 to Nov. 30) the censor having interfered with the publication of further statistics, are as follows:

August: 15 aeroplanes, 32 airmen.  
September: 15 aeroplanes, 23 airmen.  
October: 12 aeroplanes, 24 airmen.  
November: 25 aeroplanes, 52 airmen.

Total: 67 aeroplanes, 131 airmen.

As can be seen the Anglo-Franco-Belgian aeroplanes have in four months' time destroyed more enemy aircraft than the French alone have lost in ten months of warfare. If we add to these figures the number of German and Austrian aircraft destroyed by the Russians and Serbians, the aerial losses of the Teutons must be considered as extremely heavy, which may account for the lessened activity of their airmen.

The French War Office issued the following statement on July 13:

"An aerial squadron of thirty-five aeroplanes ascended this morning, in spite of a wind blowing forty miles an hour, and bombarded the railroad station strategically established by the Germans at Vigneulles-les-Hattonchatel. This station served the region of the Calonne trenches and that of the Forest of Apremont. Very important stores of every kind, and particularly ammunition, were concentrated there. Our aviators dropped upon these objectives 171 bombs, each of ninety kilograms (about 190 pounds).

"The bombardment started several fires. All our machines returned, although they had been violently cannonaded."

The night communique of the same day says:

"Our aviators, continuing their bombing enterprises, succeeded yesterday in causing important damage to the station at Libercourt, the military bifurcation between Douai and Lille. One squadron of twenty aeroplanes dropped on the buildings and roads twenty-four shells of 90 mm. and sixteen shells of 150 mm.

"Aeroplanes furnished with cannon, which were part of the squadron, bombarded a train that had come to a stop between two stations, and also obliged a German aeroplane to come to the ground."

A French squadron of ten fighting aeroplanes dropped on July 16 forty-six torpedoes of 75 calibre and six large bombs on the military station at Chauny, where there are important depots of war material.

Fire broke out in two places. A barge was blown up by the aeroplanes on the Oise Canal.

## Germany

The German Admiralty announced the following on July 6:

"The English attempted on the morning of July 4 a great aeroplane attack against the German position in a German bay (probably Wilhelmshaven, on Jahde Bay) which failed.

"German airships ascertained at dawn off Terschelling that the advancing British naval forces, consisting of several hydroplane motorships, were accompanied by cruisers. Our destroyers forced them to retreat.

"One British hydroplane which succeeded in rising was pursued by German aeroplanes but escaped by flying over Dutch territory."

## Great Britain

The annual accounts of the British dockyards expenditures for last year disclose the fact that airship No. 16 was being constructed in 1914 for the Royal Naval Air Service.

Great mystery has surrounded since the outbreak of the war the activity of British dirigibles; at that time eleven dirigibles were building for the R.N.A.S. two of which were of the structure type and the remainder of the pressure (non-rigid) type. Two large airships, an Astra-Torres and a Parseval were in commission, while five smaller and older craft served for training purposes.

The R.N. Air Service uses its airships mainly for convoying army transports across the Channel, although quite a number are constantly on scout duty on the East Coast and around London.

The British government has completed a plan for state insurance against aircraft and bombardment. It will work in connection with fire insurance offices.

The rates will be identical for all districts, and for private dwellings are two shillings per cent. against aircraft and three shillings against aircraft and bombardment.

## Italy

Several German dirigible balloons, according to reports, have been transported to the Austrian coast of the Adriatic Sea, to fly across the Adriatic to Italy, pass the Apennines and reach Rome.

The Italian government has notified the Vatican, and the Pope has ordered its lights lowered or extinguished at an early hour. The Pope has directed the removal of art treasures from places exposed to damage by bombs.

Special signalling posts have been established on mountains and in Monte Mario, behind the Vatican. Night experiments have been made with rockets and flashlights, by which the officials will be warned of the approach of any airship.

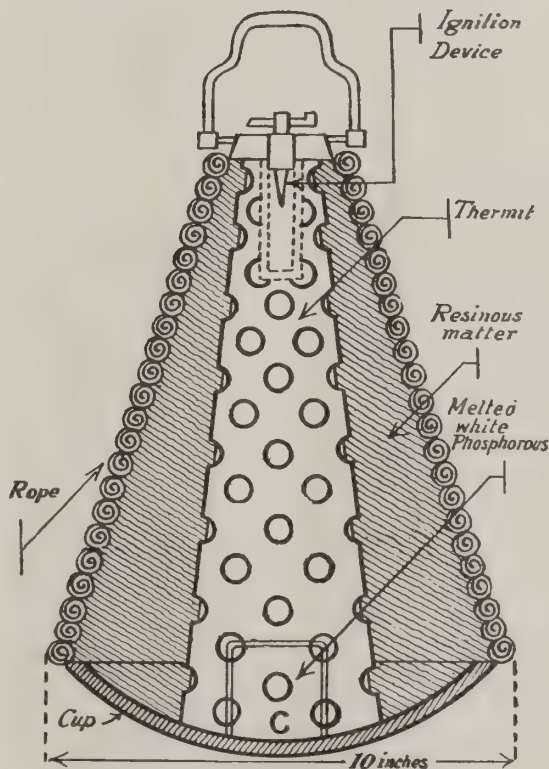
Boy Scouts are waiting in every police station to start any moment on bicycles to warn the people by bugle calls of danger. Instructions have been issued regarding measures for the protection of houses.

On July 18 three Austrian seaplanes bombarded Bari. Eight bombs were dropped in the heart of the city, killing six persons. On the return journey one of the flyers was struck by Italian rifle fire and brought down in the sea off Bareltta, just to the north.

Two Italian soldiers embarked quickly in a fishing smack and gave chase. They came upon the fallen plane before it sank and captured two officers, occupants of the raider.

*The incendiary bomb illustrated herewith is being used by German airships for the purpose of setting afire enemy towns and military establishments; it is described in a poster published by the British Fire Prevention Committee as follows:*

*"The usual fire-bomb dropped by a Zeppelin is of conical shape, the diameter at the base being about ten inches. It is wrapped round with inflammable cord, which gives it rather a nautical appearance, enhanced by a handle at the apex for lowering it over the gunwale of the airship—if airships have gunwales. The base is a flat cup, and from this to the handle runs a hollow metal funnel forming the centre and business part of the bomb. This centre funnel is filled with thermite. Thermite is the preparation which on ignition produces a heat so intense as to melt steel. The ignition of thermite creates a tremendous glare of light, and the heat melts the metal funnel. The molten metal spreads when the bomb strikes. It sets up at once a fierce fire if it strikes anything combustible, but at the beginning it is only a small fire, and if it is tackled at once with water it can be put out before it does any damage to speak of."*



*Section of Incendiary Bomb.*





# MODEL NEWS

Edited by WALTER H. PHIPPS



## Aero Science Club Bulletin By G. A. Cavanagh

In view of the efforts on the part of the Publicity Committee, new members are being enrolled every week and many applications have been received. The Committee is now working out a plan which promises to result in many new members being enrolled.

Ten members have stated their intentions of participating in the elimination contest scheduled for August 1st, the first and second best flyers of which event will be awarded each a yearly membership certificate to the Aeronautical Society. As the Aero Club of America has permitted the use of a cyclometer for measuring in the contests, Mr. Barker was appointed to carefully inspect and adjust the Club's cyclometer after which it will be inspected by representatives of the Aero Club of America to insure its accuracy. However, should the cyclometer prove inaccurate a steel tape will be used.

A report was received from Mr. Gaines of the Hudson Wright Company stating that the new Wright flying boat was sent to Dayton for repairs and would be ready to resume flying in three weeks' time. A contest is to be held some time in the near future for the ride in the flying boat which was offered to the Club by Mr. Gaines.

Mr. Frank Schober was present with his three-cylinder rotary motor which worked remarkably well. Recently Messrs. Schober and Funk made some trial flights with their new compressed air motored machine which they claim flew remarkably well remaining in the air 21 seconds. Pictures of the machine in flight were exhibited. Mr. Schober is preparing for his contest with Mr. John McMahon for the American record for compressed air driven models which contest is expected to take place at Garden City, L. I., August 22nd. A very spirited contest is expected in view of Mr. McMahon's recent claim of a duration of 17 seconds. For further particulars address the Secretary, Mr. G. A. Cavanagh, No. 29 West 39th Street, New York City.

## Buffalo Model Aero Club By W. J. Webster

On Saturday afternoon, July 10, the B. M. A. C. held its first field meet, and due partly to very favorable weather conditions, the meet was a great success.

From 2:30 to 6:30, flights were continually being made, and were witnessed by many inquisitive spectators.

The object of the meet, to establish Club records, was adhered to in every respect, and the best records of the day, considering the class of models, were: 36½ seconds' duration, with a 30-inch model, and 530 ft. distance with a 30-in. model. The duration by Mr. J. W. Schreier, and distance by Mr. C. Weyand, president of the club.

Mr. L. Gentzsch obtained fine results with a scale reproduction of an Antoinette monoplane, and an exhibition in speed flying was given by Mr. C. Gellart, with a modified "White" racer. For Club particulars, address Mr. W. J. Webster, Secretary, No. 787 Delaware Ave.

## An Interesting Model Development

The following interesting description and drawing have been kindly sent us by Mr. B. Westgate, a well-known model flyer of Brooklyn, N. Y. He writes:

"I am enclosing a rough sketch of a model I have experimented with, off and on, for several years. I designed it originally with the intention of cutting loose from the type of model which has become so conventional to-day. Keep-

ing this object in view, I decided that the main thing to do was to cut down head resistance by enclosing the rubber strands in a more or less streamline body, and still use two propellers. The method of using two propellers in tandem, rotating in opposite directions by the use of bevel gears did not appeal to me, for several very obvious reasons. First it was too complicated and ate up too much power and again it was too heavy and cumbersome. I finally decided on a gear arrangement using but two flat gears. This arrangement proved very satisfactory, it using but very little of the precious power. Referring to Fig. No. 2 on the sketch. The rear propeller (No. 9) is driven direct by the rubber strands; the thrust working on the soldered washer (No. 2); the other propeller (No. 8) is driven through the two gears (No. 6) and (No. 5). The propeller (No. 8) being made to fit over the tubing (No. 7) to which gear (No. 5) is soldered, it is plain that it revolves around the direct driven shaft (No. 1). When the strands are wound in the usual way this causes the front propeller (No. 8) to rotate in a direction opposite to shaft (No. 1) which it uses as an axle and to which the rear propeller (No. 9) is secured by the dog (No. 4) — (No. 4) being soldered to the shaft and tubing (No. 13) adjacent. The thrust of the gear shaft (No. 10) is taken up by a plain tubing bearing in the frame of the gear box similar to the one used for like purpose on the direct shaft (No. 7). This all sounds a great deal more complicated than it really is. The efficiency of the device is not hindered by any appreciable loss of power as the rear propeller is driven direct by a straight shaft, and the front one by only one pair of gears and one simple thrust bearing.

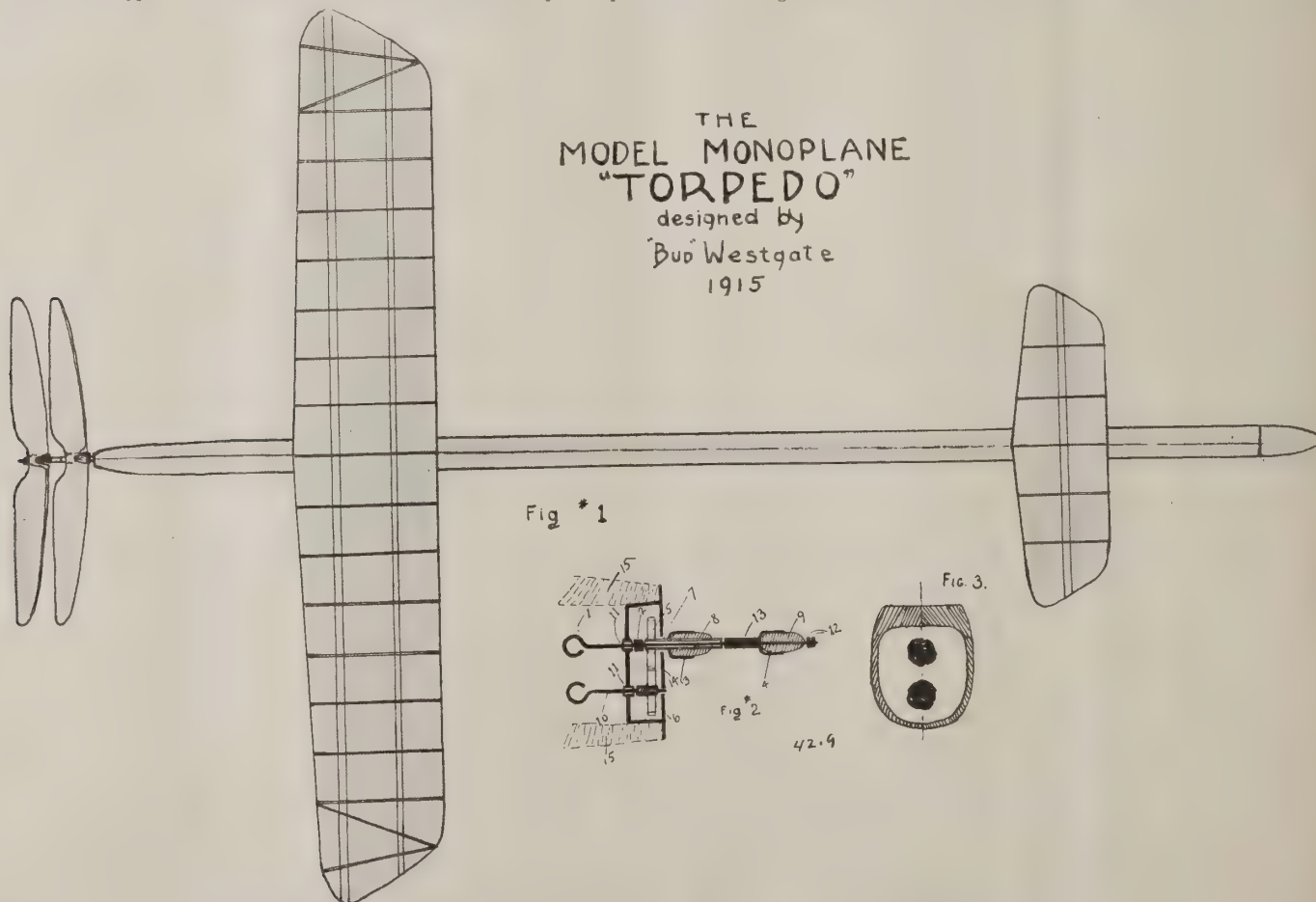
"The whole gear box is housed in the frame which is made of balsa wood hollowed out. The section at the center being shown in Fig. 3. The frame is made from two sticks of balsa 36 inches long and 1½ inches wide and ¾-inch thick. They are first glued together using a piece of paper in between to facilitate splitting them open afterwards. Then the body is shaped as shown in Fig. 1. This finished, the two halves are split open and the inside hollowed out with gauges. As the hull of the rubber is within the frame it can be made with quite thin walls, but having the upper wall or roof thicker for rigidity, see Fig. 3 (a cross section at the center). The halves are then matched and cemented permanently with 'model glue.' The frame can next be bound at intervals of five or six inches with a few turns of thread, for strength.

"The planes are double surfaced and are 28x4½ inches and 10x3 inches respectively.

"The propellers are 10 inches in diameter and carved from regulation white pine 'blanks' 1-inch thick. As the rear propeller receives air travelling in the same direction as it is about to thrust it, it does not do as much work as the front one, which does not. This can be remedied by changing the thrust of the rear propeller to offset the difference. This is necessary as without it there is a tendency for the torque to show itself. The correct adjustment can be found by suspending the model on threads one at each end of the model, and adjusting the pitch of the propellers by bending them over a flame until the model balances perfectly. There is practically no torque working on the frame as one motor balances the other when perfectly adjusted. The rubber is wound in the usual way and is anchored at the front end by two hooks which are fastened to the head and which hold same in place."

## Note

Next week we will publish complete working drawings of a simple hand-launched distance model which has flown 2,740 feet. This machine is not a difficult one to build and should serve as a basis for constructing a model for the forthcoming distance contests.



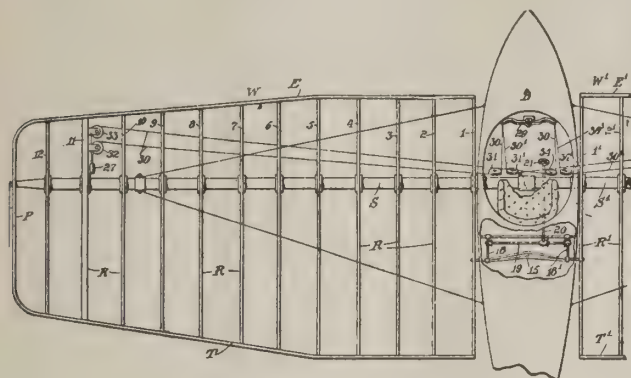
An interesting double propeller monoplane model constructed by Mr. B. Westgate of Brooklyn, and entered in the National Model Aeroplane Competition

# RECENT AERO PATENTS

BY WILLIAM N. MOORE

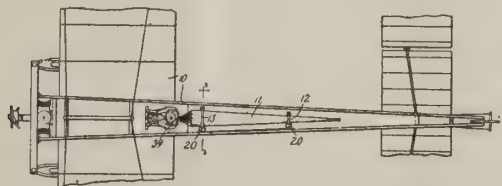
1,145,013. AEROPLANE. Edson F. Gallaudet, Norwich, Conn. Filed Mar. 20, 1912. Serial No. 684,947. (Cl. 244—29).

1. In an aeroplane, a flexible wing structure comprising a transverse spar, a series of fore and aft ribs mounted upon the spar, rigidly at its inner and rotatably at its outer ends, and connected together at their front and rear ends respectively by flexible nose and tail pieces, and means independent of the rotation of the spar for rocking thereon one of the outer rotatable ribs to thereby produce a warping of the entire outer portion of the wing.



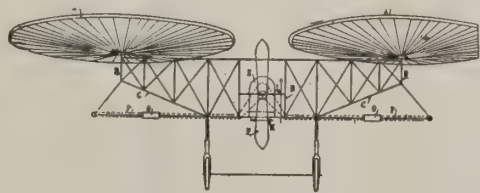
1,134,884. SAFETY DEVICE FOR AVIATORS. William Alexander Mackay, North Sydney, Nova Scotia, Canada. Filed Aug. 21, 1912. Serial No. 716,173. (Cl. 244—21.)

1. The herein described means to secure a parachute detachably to an aeroplane comprising a casing having a side opening near one end, a strap adapted to surround the parachute, a catch connected to one end of the strap and including a rigid housing and a flexible tongue secured at one end of the housing, said catch being adapted to project into said opening and the tongue having a hook projecting laterally from the housing, a locking dog movable within the casing and co-operating with said hook, a trigger having a projection co-operating with the dog while the latter is moving to its locking position and whereby the trigger is moved to hold the dog normally in locking position, and means under the control of the aviator normally holding the trigger in said locking position, substantially as set forth.



1,135,191. FLYING-MACHINE. Marie Francois Joseph Leonce Jumeau, Pnom-Penh, Cambodia, French Indo-China. Filed Jan. 16, 1912. Serial No. 671,496. (Cl. 244—14.)

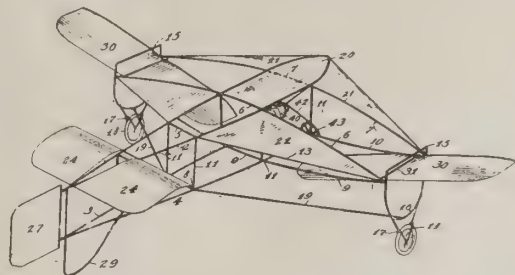
1. In a flying machine, in combination, a frame, a vertically rotating screw propeller at the forward end of said frame, means for actuating said screw propeller, shafts symmetrically arranged on both sides of the frame at the rear of the screw propeller, said shafts being slightly inclined to the rear, hubs loosely mounted



on said shafts so as to rotate freely thereon, rims encircling the hubs, wires stretched in radial planes between the hubs and the rims so that pairs of said wires define warped surfaces, and fabric vanes stretched over said pairs of wires, said vanes having relatively long narrow channels there between.

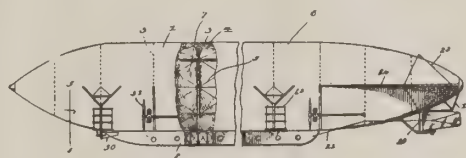
1,135,009. FLYING-MACHINE. Harry C. Gammeter, Bratenahl, Ohio. Filed Nov. 17, 1911. Serial No. 660,833. (Cl. 244—17.)

1. In a flying machine, the combination, with a frame, of two wings flexible at their rear and inner and outer edges and provided with valves opening downwardly and each pivotally mounted adjacent to the center of the wing, one of the wings being placed each side of the center of flight, and means for oscillating such wings about their axes.



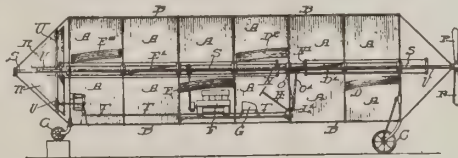
1,135,209. AIRSHIP. Adolf Schad and Emil Seidel, Brooklyn, N. Y. Filed Oct. 7, 1913. Serial No. 793,844. (Cl. 244—6.)

1. An air ship of the rigid dirigible balloon type including an aerostat formed of a balloon-inclosing frame and an outer covering, said frame consisting of annular transverse and longitudinal frame elements rigidly tied and braced, each of said frame elements consisting of spaced frame members having reinforcing crimps, said frame members being connected by an interposed diagonal bracing.



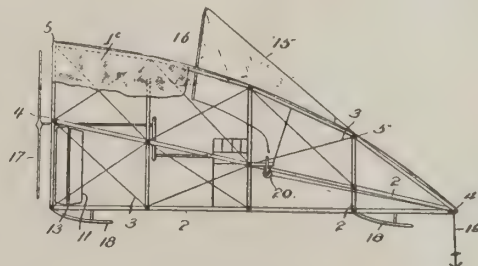
1,135,242. FLYING-MACHINE. Charles Campbell Worthington, Shawnee, Pa. Filed Sept. 3, 1910. Serial No. 580,398. (Cl. 244—12.)

1. In a flying machine, the combination with a longitudinal vertical plane having a substantially continuous surface, and a stepped series of lifting planes extending laterally from said vertical plane, the forward plane of each stepped series being inclined downwardly, the rear planes being inclined upwardly and the central planes extending horizontally, each of said lifting planes being connected to the longitudinal axis between the upper and lower edges of the longitudinal vertical plane.



1,135,455. FLYING-MACHINE. Willard S. Isham, Washington, D. C. Filed Mar. 3, 1910. Serial No. 547,038. (Cl. 244—14.)

1. In an aeroplane, the combination, with a power-driven propeller, of a plane curving rearwardly and comprising a substantially continuous surface extending backward and downward



and arranged to react against substantially the propeller's entire blast.





Aeronitis is a pleasant, a decidedly infectious ailment, which makes its victims "flighty," mentally and physically. At times it has a pathologic, at times merely a psychologic foundation. It already has affected thousands; it will get the rest of the world in time. Its symptoms vary in each case and each victim has a different story to tell. When you finish this column **you** may be infected, and may have a story all of your own. If so, your contribution will be welcomed by your fellow **aeronuts**. Initials of contributor will be printed when requested.

### Shakespeare on Flying

In past ages there was a custom that in any crisis or perplexity one should open the Bible haphazard and whatever passage one alighted on was a guidance or prophecy for the future. The same course was adopted with Virgil, who in the Middle Ages was held in a respect, almost reverence, accorded to no other Pagan writer, and there is an historic instance of Charles I. turning up a famous passage in the Aeneid which prophesied disaster that was to happen to him.

Recently the German Chancellor was appealed to as to whether Shakespeare's plays should continue to be produced in Berlin during the war, and when expressing approval of this course he cited the line from "*Henry V.*," Act IV., Scene 8: "And then to Calais; and to England then," as a good omen for the German troops.

So far, things have not worked out as he anticipated, and a writer in London Aeronautics who signs himself "Streamline" says that it looks like a prophecy for "our own men" when peace is declared. Continuing in the same vein he writes:

"And then to Calais; and to England then,  
Where ne'er from France arrived more happy men."

If the Chancellor seeks quotations from Shakespeare one would rather refer him to "*The Merchant of Venice*," Act I., Scene 2:—

NERISSA: "How like you the young German?"

PORTIA: "Very vilely in the morning, when he is sober; and most vilely in the afternoon, when he is drunk; when he is best, he is a little worse than a man; and when he is worst, he is little better than a beast."

There are many lines in Shakespeare that might be aptly quoted in connection with the war, but my concern is only with those that have a bearing on flying, and these preliminary remarks are by way of an apology and to show that if I appear unduly flippant and disrespectful of the immortal bard in putting a more modern interpretation on his words than were perhaps intended by him, at least I err in distinguished company.

I will commence with "*Macbeth*," which is full of apposite

allusions. In the first scene there is the line, "Hover through the fog and filthy air," which suggests a Zeppelin invasion of London in November. In the very next line, "What bloody man is this? He can report," we have the unsympathetic attitude of the military to newspaper correspondents.

In the third scene, where the First Witch says—

"Here I have a pilot's thumb,  
Wrecked as homeward he did come,"

we find the modern souvenir hunter after an aeroplane smash at her worst.

In Act III., Scene 5, are the words, "I am for the air," which would be a fine motto for the R.F.C. or R.N.A.S.

In Act IV., Scene 1, Macbeth says: "Infected be the air on which they ride, And damn'd all those that trust them!" which will be echoed by people made timorous by threats of a German aerial invasion; and in Act V., Scene 7, he says, "I cannot fly."

In the First Part of "*Henry IV.*," Act IV., Scene 1, is the passage:

"I saw young Harry  
gallantly armed,  
Rise from the ground like feathered Mercury"

(which gives us the picture of a well-known pilot of the R.N.A.S. starting on a bomb-dropping expedition); and in Act V., Scene 1:—

"but with nimble wing  
We were enforced, for safety's sake, to fly  
Out of your sight"

(which indicates the presence of anti-aircraft guns).

In "*Henry V.*," Act IV., Scene 3:—

"We will not fly  
o'er the French soldiers' heads."

(A good many aviators on both sides have had cause to dread the French soldiers' marksmanship).

Act V., Scene 6: "Then fly abreast." (The first indication of any aerial drill).

In "*Henry VI.*," First Part, Act I., Scene 1:—

"Another would fly swift, but wanteth wings."

(Evidently a shortage of spare parts).

Act III., Scene 2: "What! will you fly?"

Act IV., Scene 3:—

"the noble Talbot  
girdled with a waist of iron."

(The first mention of the armoured car).

Act IV., Scene 5:—

JOHN: "And shall I fly?"

TALBOT: "Fly to revenge my death if I be slain."

JOHN: "He that flies so will ne'er return again."

Second Part, Act V., Scene 2:—

"Let no soldier fly."

(The Navy has taken over the dirigibles: is this a hint that they will take over all the aeroplanes too?)

"I would speak blasphemy ere bid you fly,  
But fly you must."

First Part, Act IV., Scene 3:—

"An invincible, unconquered spirit."

(Is this Shell or Pratt's?)

Second Part, Act IV., Scene 7:—

"We fly to heaven."

In "*Antony and Cleopatra*," Act IV., Scene 10, there is a very definite prophecy of aerial warfare, and good expression of the attitude to which the British Empire has been roused to-day.

ANTONY: "Their preparation is to-day by sea;  
We please them not by land."

SCARUS: "For both, my lord."

ANTONY: "I would they'd fight i' the fire, or i' the air;  
We'd fight there too."

In Act III., Scene 8, Enobarbus says:

"With all their sixty, fly and turn the rudder."

SCARUS: "Antony claps on his sea-wing, and flies after her."

(Detachable wings a la Pemberton Billing.)

ENOBARBUS: "He has given example for our flight."

In Act III., Scene 11, Enobarbus says:—

"Your flying flags." (To be Continued)



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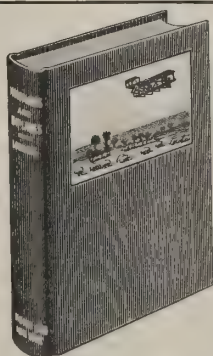
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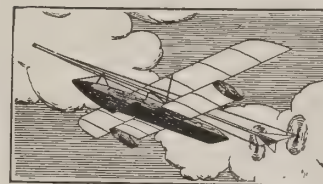
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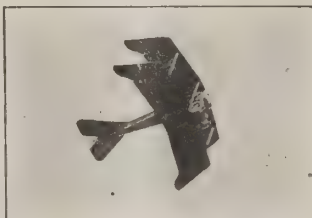
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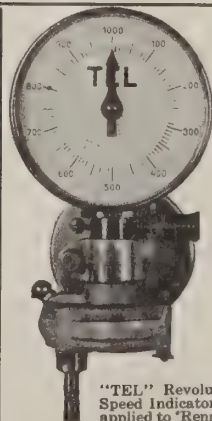
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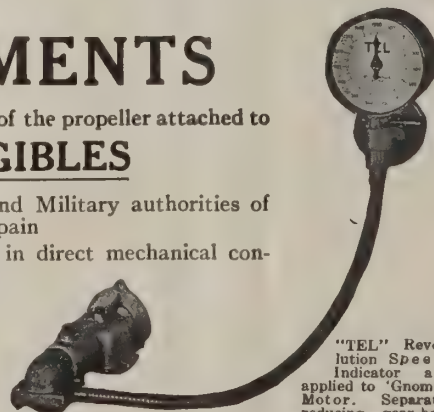
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Vol. I. No. 20

AUGUST 2, 1915

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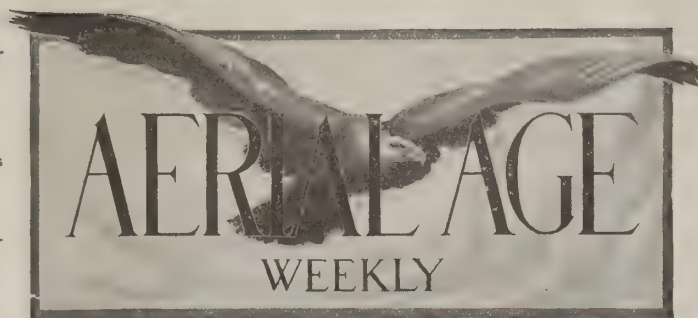
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Foreign, \$5.00

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PUBLISHED WEEKLY BY THE AERIAL AGE COMPANY, Inc., 116 West 32nd Street, New York City

Entered as Second-Class Matter, March 25, 1915, at the Post Office at New York, N. Y., under the Act of March 3, 1879

VOL. I.

NEW YORK, August 2, 1915

No. 20

## The American Society of Aeronautic Engineers Organized

AT the request of Mr. Thomas A. Edison, Chairman of the new Advisory Committee of the Navy, a body composed entirely of aeronautic engineers and experts has been organized to co-operate with the committee. The organization will be known as the American Society of Aeronautic Engineers.

The officers and directors of the new society, selected subject to approval at the first regular meeting, are prominent aeronautic engineers as follows: President, Henry A. Wise Wood; Vice-Presidents, Orville Wright, Glenn H. Curtiss, W. Starling Burgess, Elmer A. Sperry, Peter Cooper Hewitt and John Hays Hammond, Jr.; Secretary, Lawrence B. Sperry; Treasurer, Clarke Thomson; Directors, Bion J. Arnold, Emile Berliner, Thomas S. Baldwin, W. Starling Burgess, Glenn H. Curtiss, Edson F. Gallaudet, John Hays Hammond, Jr., Peter Cooper Hewitt, Howard Huntington, Grover C. Loening, J. A. D. McCurdy, Charles M. Manley, Glenn L. Martin, Raymond B. Price, John E. Sloane, Frank A. Seiberling, Elmer A. Sperry, Matthew B. Sellers, Joseph A. Steinmetz, William T. Thomas, Inglis M. Upperco, Orville Wright, Henry A. Wise Wood and Henry Woodhouse.

Four additional directors will be Army and Navy aeronautic engineers, to be selected and appointed by the Army and Navy Departments. The Smithsonian Institution, the Post Office Department, the Weather Bureau and the Bureau of Standards each are invited to appoint one director, and the Massachusetts Institute of Technology and the University of Michigan—the only two educational institutions in this country which offer courses in aeronautics—each are invited to appoint one director.

The Post Office Department was included in consideration of the fact that an important development of the coming year will undoubtedly be the employment of aeroplanes for carrying mail to places so isolated that it now takes days to deliver mail that could be delivered by aeroplane in a few hours. To make the mail carrying service efficient will require knowledge on the part of aeronautic engineers and aeroplane constructors of the requirements of the Post Office Department, and on the part of the Department of the construction and capabilities of air craft.

Almost two hundred engineers, aeroplane constructors and experts in different branches of the science of aeronautics, representing different aeronautical organizations, have been elected charter members to membership in the American Society of Aeronautic Engineers. A score of aeronautic engineers, scientists

and expert aviators who are not included in the first list are being invited to join, so as to bring into the membership of this society all the aeronautic talent of this country, and to afford to the Navy and other branches of the Government the co-operation of their combined efforts.

The American Society of Aeronautic Engineers has its temporary headquarters at 297 Madison avenue, New York.

In the rules and by-laws the Society is based on the time-tested and thoroughly efficient principles adopted by such leading technical organizations as the American Institute of Electrical Engineers and the American Society of Mechanical Engineers. Mr. Edison urged that the strict rules of these organizations will be applied in the division of membership of the American Society of Aeronautic Engineers, so as to have the "fellow" membership composed entirely of aeronautic engineers, experts and authorities in different branches of the art and science of aeronautics.

## Henry A. Wise Wood—the President of the American Society of Aeronautic Engineers

THE selection of Mr. Henry A. Wise Wood as president was a happy one. As the primal purpose of this body is to assist the Navy, and the Navy's aeronautical needs are manifold, it is absolutely essential that the head of such a body at this time be a man with thorough knowledge of the Navy, its basic purpose, its organization, fundamentals of naval tactics, relation of aeronautics to the other branches of the Navy; application of aeronautics in naval warfare, and the present day problems and aeronautical needs of the Navy. Such a man must, of course, have a thorough knowledge of aeronautics, the theory, construction and application of air craft; knowledge of existing types of aeroplanes, dirigibles, motors and accessories and the history of their development. And he must, to render services of the Society of real value to the Navy, have the confidence of the leading experts in the different branches of aeronautics, so as to have their co-operation in solving the many-sided problems that will have to be solved.

Mr. Henry A. Wise Wood, we are pleased to say, meets all these requirements and has, in addition, the advantage of not being financially interested in any aeronautical enterprise, and is known as being absolutely "neutral" on the patent question, which is to come up again in the courts next November.

An inventor himself, and head of nine concerns capitalized at \$4,750,000, all exploiting his inventions, Mr. Wood knows the value of patents and the need of protecting the inventor.

Mr. Wood has been identified with aeronautics since



his boyhood. He always believed that dynamic flight would be achieved, and he followed the work of experimenters throughout these years. In a poem entitled "Flight," written by him in 1898, included in the collection entitled "Fancies," published in London, we find the following:

A bird on the wing!  
What a marvelous thing  
Is its flight towards the ambient sky;  
A sweep and a flutter  
A feathery mutter,  
A flit—and it rises on high.  
A wingful of air  
Is the whole of its stair  
As it clambers to summits of blue;  
While the grace of its flight  
As it passes from sight,  
O, man! is a challenge to you.

Mr. Wood joined the Aero Club of America in 1906 and has been one of the most active officers. He has been a director of the Aeronautical Society. In recognition of his activity in aeronautics in 1912 he was appointed one of the members of the Commission to consider the need for a National Aerodynamic Laboratory by President Taft.

His important work in connection with the development of naval aeronautics is well known. The following resolution of appreciation of his work on behalf of the development of water flying, passed at the annual meeting of the Aero Club of America in 1913, records the fact that Mr. Wood was first to interpret the value of water flying:

*Whereas, Water flying has brought to aviation a greater safety and the needful element of sport; and*

*Whereas, Although the first successful marine aeroplane, created by Curtiss, aroused the incredulity of the world at large, which, failing to see its inherent value, considered it but a freak, Mr. Henry A. Wise Wood at once correctly foresaw its possibilities, and orally and in writing has since untiringly urged and fostered its development; and*

*Whereas, In the two years last past water flying has made such rapid strides in facility and safety as to have become an established and popular sport, be it therefore*

*Resolved, That to Mr. Henry A. Wise Wood there shall be extended by the Aero Club of America an expression of its appreciation of his invaluable work on behalf of the development of this new department of aviation.*

The demonstration of potentiality of the submarine and the air craft, their rise as dominant weapons for naval warfare, have changed the opinion of the naval authorities the world over, who had disagreed with Sir Percy Scott when he prophesied this rise and urged that large fleets of submarines and aeroplanes be acquired by England. Secretary Daniels, like all the heads of the world's navies, calls on the genius of his country to solve the problems of meeting the new conditions. Mr. Wood was one of the very few who appreciated the truth of Sir Scott's prophecy. In an editorial in our monthly contemporary *Flying*, written in June, 1914, two months before the outbreak of the war, Mr. Wood expressed his belief in Sir Scott's prophecy as follows:

*The foregoing dicta of Admiral Sir Percy Scott, of the British Navy, which mean that the association of aeroplane and submarine has rendered the dreadnought obsolete, and that we may soon expect it and all surface-keeping vessels of war to disappear from*

*the high seas, must have come as a shock to the world's admiralities. Salt water nurtures convention; nothing is so distasteful to a man of the sea as a new fashion in ship, or gear, or tactics. And the brine-soaked official, who has seen hard service and at last is snug in port at a desk high up in the naval service of his country, is perhaps the world's best example of conservative man. And so one may readily imagine many a beloved, portly, white-haired gentleman, grown red with choler, pounding the council table in emphatic disapproval of Sir Percy's heretical statements. To leave off fighting in the good old noisy and spectacular way; instead, merely to rip open an enemy's belly in silence amid the dim light filtering through two fathoms of green water, must indeed seem sacrilege to those trained in the schools of Nelson, Farragut, Dewey and Togo.*

*Still, we believe the philosophy of the matter lies true with Scott, and that he, with that rare flash of inspiration which occasionally illumines an obscure matter which has altered its nature unobserved, has suddenly disclosed a great truth. Scott perceives that deadly underwater attack has suddenly become not only practicable, but certain and easy because of the advent of the aeroplane; that, metaphorically speaking, the mechanical gull may now surely lead the mechanical sword fish to the belly of the mechanical whale. If uninterrupted communication may be maintained between seaplane and submarine, and both be in sufficient numbers, then surely that which lies between them afloat, however armored or gunned, must succumb. Of what use eleven-inch side armor and fourteen-inch gun with never an enemy in sight upon the face of the waters? When an unreachable observer overhead and an invisible torpedoist beneath are linked to work as a unit the future of the tender hulled dreadnought would indeed seem to be in doubt.*

*Sir Percy Scott, we believe, has correctly read the signs of the times. Naval progress, as we interpret present indications in the light of his exposition, would appear to be working toward an active campaign of development beneath water—an enlargement of the submarine with an increase in its speed, its radius of action, and its offensive power. And now that it need no longer grope for its objective the submarine grown to dreadnought proportions is no unthinkable thing. Nor is it unthinkable that the scene of a future naval engagement should disclose a battle of air craft overhead, with men and blazing machines tumbling into the sea to the accompaniment of sub-surface rumblings and uprising geysers of water—with never a ship in sight. The aeroplane assuredly has upset the equilibrium of the established practices of warfare.*

This gives an idea of Mr. Wood's keen understanding of the Navy's problems and needs, which, recently, was responsible for his being selected to be chairman of the Conference Committee on National Preparedness, which represents the Navy League, National Security League, Army League, Automobile Club of America, Aero Club of America, the American Red Cross Society, American Legion, American Institute of Civil Engineers and the Institute of Radio Engineers.

Mr. Wood is fifty years old. He was born in New York, his father was Mayor of New York for three terms and member of Congress for twenty years.

It surely augurs well for the future American Society of Aeronautic Engineers that such a man is to lead its activities, and we join with others in hearty congratulations. Mr. Wood is an idealist, a scientific engineer and a business man: a rare combination.



# THE NEWS OF THE WEEK

## Burgess Company To Erect Large Plant at Lynn.

According to an announcement made recently, the Burgess Aeroplane Company is planning to erect a large modern plant at Lynn, Mass., in addition to their present plant at Marblehead, which is being rushed to capacity.

## Burgess Company Opens New York Office

The Burgess Aeroplane Company has opened a New York office at 331 Madison avenue, which is in charge of Frank T. Coffyn, the veteran Wright pilot and Burgess instructor.

## Flies Over Continental Divide with Gyro Motor

In his 90 h.p. Gyro motored Loop Tractor, De Lloyd Thompson recently made a wonderful flight over the Continental Divide, Butte, Mont., at a height of over 10,000 feet. Thompson reports that throughout the perilous trip his Gyro motor worked faultlessly, so perfectly in fact that at this height he had plenty of reserve power and was able to loop the loop twelve times and negotiate the tumble with ease at this high altitude.

## Air Torpedo Boat Invented by Fiske

An aerial torpedo boat for attacks on ships in protected harbors is projected in patents just issued to Rear Admiral Bradley A. Fiske. The plan contemplates equipping a monster aeroplane, like the aircraft being built in this country for the British government, with a Whitehead torpedo of regulation navy type.

Swooping down at a distance of five miles, the craft would drop its torpedo into the water just as it would have been launched from a destroyer. The impact sets the torpedo's machinery in motion and it is off at a speed of more than forty knots an hour toward the enemy ship.

Rear Admiral Fiske believes that the flying torpedo boat would make it possible to attack a fleet within a landlocked harbor. The range of the newest navy torpedoes is 10,000 yards, and even the older types will be effective at 7,000 yards. The 2,000-pound weapon would be taken over harbor defenses at an altitude safe from gunfire. Once over the bay the machine would glide to within ten or twenty feet of the water, the torpedo rudders would be set and it would be dropped to do its work, while the aeroplane rose and sped away.

It is possible that a type of radio controlled torpedo may be employed, one aeroplane carrying the torpedo and another the wireless machinery to control the missile's flight through the water. It is pointed out that Rear Admiral Fiske obtained patents on such a method of control in 1900, when he was a lieutenant commander in the navy.

## Aeroplane Flights for Newsdealers' Field Day

Aeroplane flights over Main street and at Columbia Park, in Buffalo, are being arranged for the yearly outing of the Buffalo Newsdealers' Association, which will be carried out on August 14.

## Engel Named Curtiss Instructor

Al J. Engel, of Cleveland, has been appointed instructor of the Curtiss aviation school at Buffalo. Engel is well known in Buffalo, having given exhibitions during the Perry centennial celebration.

The hydroaeroplane which he used then was one of the first turned out at the plant of the Curtiss Aeroplane Company in Hammondsport.

Flying will be resumed at the school early next week, when naval militia officers from New York City will take up their course of study.

## Atwood May Buy Thomas Aeroplane

Harry N. Atwood has been in Ithaca looking over the Thomas Brothers Aeroplane Company plant, with a view of purchasing one of their machines.

## Webster Flies Timson-Albree Taube.

The Timson-Albree monoplane, designed and built by Roscoe Timson and Norman Albree, made two very successful flights at Nahant Beach recently, Clifford Webster, the well-known Marblehead aviator, handling the machine. It was taken from Swampscott to Little Nahant at 4.30 in the morning and assembled with the assistance of a number of friends of Messrs. Timson and Albree, and was ready for trial about 7 o'clock. Mr. Webster "taxied" up the beach once and returned, to become accustomed to the controls, as they are slightly different from those used on machines at Marblehead. On the second trip down the beach toward Lynn, Mr. Webster got the monoplane into the air about thirty feet, covering almost 600 yards, and landed perfectly. The return trip toward Little Nahant was made a few minutes later and was the best flight made.

The monoplane has a spread of 48 feet 11½ inches, is 20 feet long and the wings have a chord of 6 feet 4 inches. With an operator it weighs 1,150 pounds.

Mr. Timson, through countless experiments with models, demonstrated that the principles embodied indicated that the monoplane possessed inherent stability. Today's trial showed that it was exceptionally steady, not a waver being visible during both the flights.

Canadian Students at the Thomas Brothers Aeroplane Company School, Ithaca, N. Y.







Standing: Lieut. M. Kilner. Seated: Lieut. C. A. Jones, of the U. S. Aviation Corps at Coronado, Cal.

#### Aeroplane Station To Be Established at St. Louis.

An aviation station and armory to train young men in aviation will be established on the levee, near the foot of Washington avenue, St. Louis, according to plans announced by Albert Bond Lambert at a conference with Major J. J. Dickinson of Washington, D. C., field secretary of the Navy League of the United States, at the Hotel Jefferson recently.

Lambert and Dickinson talked over the necessity for an increase in aeroplanes for the United States army and navy in time of war. Both declared the fighting strength of the army and navy was decreased 40 per cent. through the lack of aviation efficiency.

Lambert, who is the St. Louis head of the United States Aviation Reserve Corps, said that Congress would be asked to appropriate \$5,000,000 for the purchase and building of the latest type of aeroplanes for use throughout the United States. St. Louis, he said, on account of its geographical position, would be given a large number of the air craft.

The aviators trained in St. Louis will be made ready for actual war service. If the money is granted by Congress there will be purchased 400 machines.

#### Louisiana National Guard Hopes To Get Aeroplane

Following the lead of the various other states who have or are contemplating adding aeroplanes to their equipment for field service, the Louisiana National Guard now proposes to add an aeroplane to its equipment. Adjutant General McNeese is very much interested in the project and is doing everything in his power to secure a machine for the guard. In this he is being aided by Mr. James T. Amiss of Baton Rouge, who has perfected a device which enables aeroplanes to start from and alight on wires.

Knowing that about 75 per cent. of the effective work in the European war is being done by the artillery whose fire is directed by the aeroplane, the Aero Club of America is conducting a campaign for the express purpose of strengthening our forces for national defense. This club receives donations from wealthy patriots and is directing its efforts toward placing in each state an aeroplane to be managed by the state national guards. The club will give an aeroplane to any state meeting their requirements, which is to fit and provide themselves with proper means to care for the machine; then man and manipulate it and train men for immediate field service with it. Some four or five states have already taken advantage of this offer and have been equipped with an aeroplane.

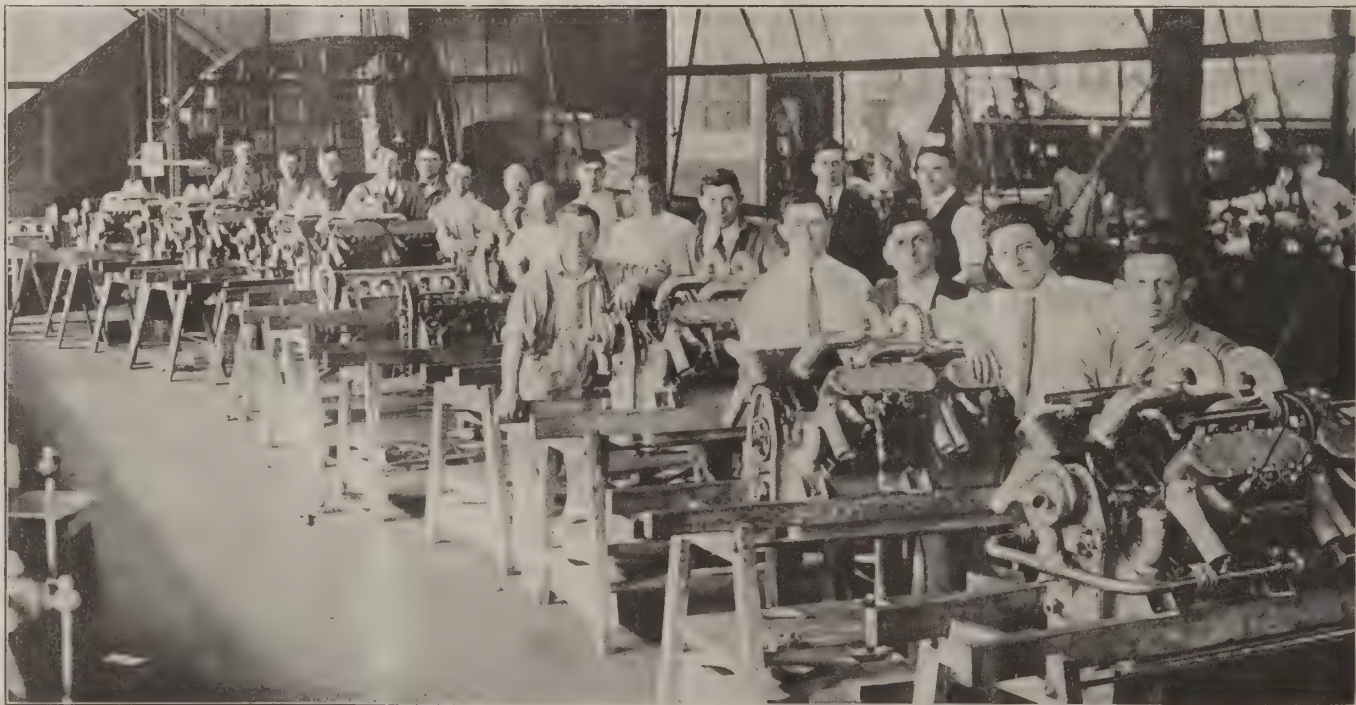
It is felt and urged by those who are interested that the United States is not prepared to defend herself in case of an attack from a foreign foe. They point to the fact that we have only 120,000 members in the national guard and in the majority of the states these are not armed and fully equipped for immediate service. They claim that we have no right in such perilous times as these to stand complacent and unprepared for defense, and say we are in no danger from foreign foes. They declare that we should have a strong national guard and have it fully armed and equipped with all the appurtenances of modern warfare; and to do this they say that each state should have one or more aeroplanes and have trained men to manage them.

Louisiana is one of the eleven states of the Union whose national guard is fully armed and equipped, and she intends to have an aeroplane among her equipment.

#### Wireless Is Sent by Kite

On July 22d, at West Newbury, Mass., a very important test of man-carrying kites took place at the maneuvers of the Signal Corps, when Samuel F. Perkins of Dorchester sent a kite to a height of 1,600 feet and sent messages as far as Portsmouth, Newport and the Filene station at Boston.

Wireless messages were also received by the kite from the Arlington station at Arlington, Va., and from the United States station at Bermuda. The battleship Georgia sent a message from the vicinity of Newport, and code wireless communication between two English battleships somewhere off New York harbor were also intercepted.



A busy corner devoted to the assembling of the 8-cylinder, 140 H.P. Sturtevant aeronautical motors. The present output of these motors is two per day and will be increased to four per day within a short time.



### Military Aviation News

During the past week the First Aero Squadron has been engaged in setting up and trying out the new aeroplanes recently received from the Curtiss Aeroplane Company. This Squadron will leave the Signal Corps Aviation School, San Diego, California, on July 25, 1915, for Fort Sill, Oklahoma, where it will be on duty until some time in December, working in conjunction with the School of Fire at that post. In December the Squadron will be transferred to San Antonio, Texas, for permanent station.

During the week interesting experiments were carried on in signaling, by means of Very pistols, between parties on the ground and aeroplanes in the air.

Captain Virginius E. Clark, Signal Corps, who has been taking a course in aeronautical engineering at the Massachusetts Institute of Technology during the past year, has reported for duty at the Signal Corps Aviation School and has been placed in charge of the Construction and Repair Department at the school.

Captain H. LeRoy Muller, Signal Corps, and Second Lieutenant Ralph C. Holliday, Infantry, have been relieved from aviation duty. Lieutenant Holliday has left to join the Twenty-second Infantry.

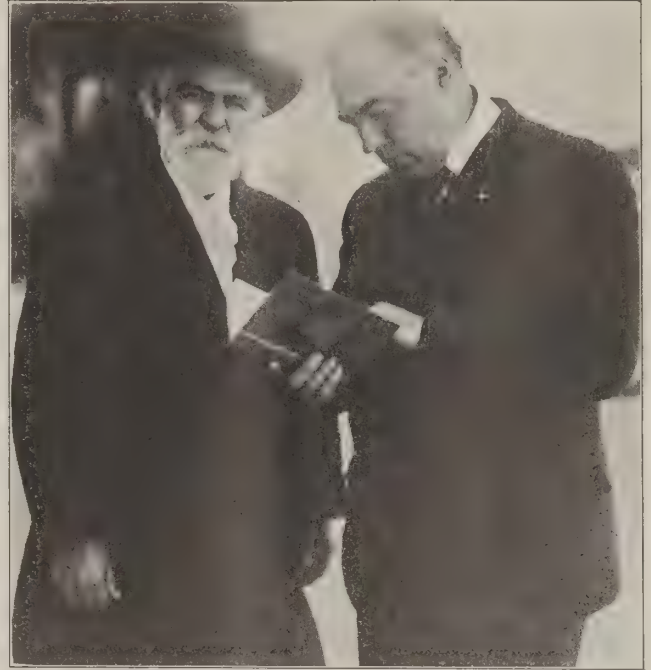
Lieutenant Colonel Samuel Reber, Signal Corps, who is in charge of aeronautics in the office of the Chief Signal Officer of the Army, arrived in San Diego, July 13. Colonel Reber is a member of the commission designated to visit various places on the Atlantic, Gulf and Pacific coasts with a view to the selection of a suitable site for the permanent location of the Signal Aviation School. Captain Richard C. Marshall, Jr., Quartermaster Corps, the second member of the commission, will join Colonel Reber here in a few days.

The following named officers have recently been rated as junior military aviators: Lieutenants Fitzgerald, MacDill, Kilner, Sutton, Christie, Rader, Gantz, Correll and Harms. This leaves as aviation students only Lieutenants Vautsmeier, Canady and Palmer.

### The Christening of "Jewel City"

Edward Markham, author of "The Man with the Hoe," and "The Shoes of Happiness," suggested the name for the first balloon to leave the Panama-Pacific Exposition grounds at San Francisco. The balloon was used by George B. Harrison in an ascension from the Exposition Marina, June 9, and when the poet learned that a name distinctive of the Exposition was desired, he suggested, "Jewel City." The name was suggested in Markham's book, "California, the Wonderful," and is used to apply to the Exposition and also to San Francisco's setting at the Pacific harbor.

Four balloons, the "California," Edward Unger, pilot; the "Queen of the Pacific," Clarence Drake, pilot; the "Jewel City," George B. Harrison, pilot, and the "Venice," Leon Brooks, pilot, were inflated to leave the Exposition, but the high wind prevailing prevented all but the "Jewel City" from



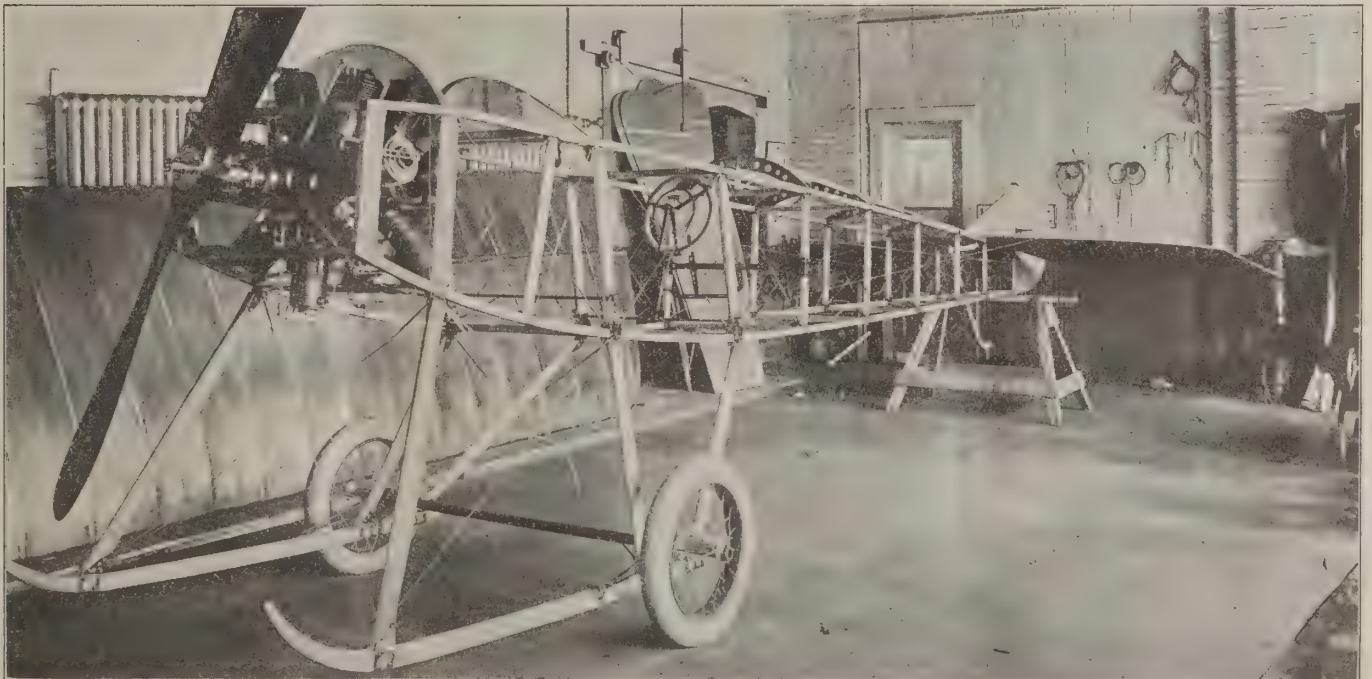
Edward Markham and George B. Harrison, photographed just prior to the christening of the Jewel City

leaving. The "Queen of the Pacific" was ripped open by the gale and the "Venice" was pulled away and dropped into the water, off shore from the Exposition. Harrison took Drake with him and left in a 40-mile wind. The "Jewel City" landed about 75 miles from the Exposition in one of the big grain fields of the San Joaquin valley southeast of Stockton. Unger repaired the "California" and with Guy T. Slaughter as his aide left the next afternoon, also traveling inland and landing near Modesto.

The purpose of the flights was to prove that inland balloon trips might be made from San Francisco.

### Ovington Buys Large Estate

Earle L. Ovington, the well-known pioneer aviator, has purchased through John C. Kiley the old Henry J. Bigelow estate, situated on Dedham and Brookline streets, Newton, Mass. The property consists of seventy acres of land, an old mansion, several cottages and a large studio building, valued at \$64,700.



Fuselage of the Simolex (Mayo) Tractor Biplane, showing the method of construction and the mounting of the 20 horsepower Gyro engine.



## CICERO NOTES

## President of Illinois Club Takes Ride

Mr. Charles Dickinson, president of the Aero Club of Illinois, again feels the "lure of the skies" urging him to take flight. Sunday he went up at Cicero three times in Hensel's Wright, piloted by Mr. Weiner. The day was perfect and the "P" glided through the air with remarkable steadiness. Mr. Dickinson stated that "it felt like old times once more" when he and Max Lille were touring Chicago's various golf courses.

Mr. Emil Laird finished his new tractor biplane and Sunday tried it out for the first time without even making a straight-away. Laird lifted the machine off the ground within 150 feet on its initial trial and flew about with great control. The new tractor has remarkably beautiful lines. The metal cowl and hood and the finely covered planes are extraordinarily built up for a boy who as yet has constructed but two machines.

## Chicago Has Big Week

From August 2d to 7th, during Chicago's great "Market Week," this city will be treated to a most interesting aviation program. Models vie with each other in efforts to draw the attention of Chicago's visiting thousands at Grant Park. The entertainment is to be under the auspices of the Chicago Chamber of Commerce and will be part of the big sport, business and pleasure week.

Mr. James S. Stephe, vice-president of the Aero Club of Illinois, has charge of the aviation and sports entertainments. He has obtained the services of aviators of national reputation.

Daily, between 5 and 6 p. m., Miss Katherine Stinson will loop the loop on the lake front in her new tractor. Miss Stinson is well known to the Chicago public, and her spectacular work at Cicero Field has made her thoroughly familiar with her new aeroplane. Mr. "Bud" Mars will fly daily in a hydroaeroplane; Messrs. Lees and Benoist will also fly their flying boats over Chicago's harbor. These three will stage interesting races with Mr. James Pugh's and other high-powered hydroplanes.

On Wednesday and Friday the Illinois Model Aeroplane Club will entertain spectators with R. O. G. models, distance machines, speed models and exhibition loop-the-loop model tractors. Medals and prizes will be awarded to the winners.

The aviators and machines who may possibly take part in these activities are: Mr. W. Weiner, with Hensel's Wright biplane; Mr. Emil Laird, with his new self-constructed tractor of 12 h.p., and Mr. Krutson with his Hall-Scott motored Curtiss.

The climax to the week's activities will come on Saturday, August 7th, when there will be aviation preliminaries at Speedway Park. On this date Barney Oldfield, challenger of Dario Resta, will demonstrate the speed qualities of his new Deloge racer, Miss Katherine Stinson will loop-the-loop, and the Illinois Model Club will exhibit speed and exhibition models.

## Welding Eliminated

Rudyard Kipling speaks of the "American Spirit" as turning a keen untroubled face home to the INSTANT NEED OF THINGS. If something has got to be done, it is done quickly.

With the rapid increase of the use of ALUMINUM by Automobile, aeroplane and other manufacturers has come a demand for a SOLDER that would do away with the tedious and unsatisfactory welding of broken aluminum parts.



The Hon. F. C. G. Eden, of London, a former student of the Curtiss Aviation School at San Diego, and holder of a Pilot's License from the Aero Club of America.

SO-LUMINUM is manufactured by the So-Luminum Mfg. & Engineering Co., at 1790 Broadway, New York, who have the sole selling rights for the world.

It is not a soldering iron proposition, as the solder is too hard and strong to make the iron feasible, and yet it runs at a very low temperature and tins very quickly.

A gasoline torch is the only thing that is necessary.

In this way it does away with welding and there is no oxidation.

Lost bits from aluminum parts can also be substituted in a very few minutes—by building into crankcases, manifold pipes, etc., and if given the hammer test will be found harder than the original.

SO-LUMINUM never breaks at the soldered point.

A job performed at one of the large automobile company's works some five months ago, in regard to a hole 10x4-inches in a Pierce-Arrow panel, was finished in the space of nine minutes, by using SO-LUMINUM instead of welding, was then subjected to the severest hammer test, panel painted and placed on top of the factory where it has been exposed, to all stresses of weather, for five months, without showing the slightest sign of oxidation. A lug can be built on a manifold pipe, or other parts, in anywhere from ten to twenty minutes, or a whole half pipe can be built on in comparatively few minutes, by using SO-LUMINUM, and in all cases, the metal when subjected to test, will break, but the SO-LUMINUM remains intact.

The absolute claim for SO-LUMINUM is that it takes the place of welding and can do the work in one-quarter the time at one-quarter the cost.

Miss Edna Jaeger, fiancée of the Hon. F. C. G. Eden, about to make a trip with Raymond V. Morris at Coronado Beach, Cal.





# AEROPLANE ENGINES\*

By Neil MacCoull, M. E.

Continued from Page 451, July 26, 1915.

The particular ratio between the crankshafts and the central gear causes the pistons to make four complete strokes during one revolution of the engine; hence there will be six power strokes per revolution. A type of rotary valve is used (shown in Fig. 16), the distinctive feature being a sleeve passing through the combustion chamber, which is held to the valve by a spring, the idea being to reduce leakage. The valve is stationary.

MACOMBER (American)

The seven cylinders of this engine are parallel and arranged around a central shaft in much

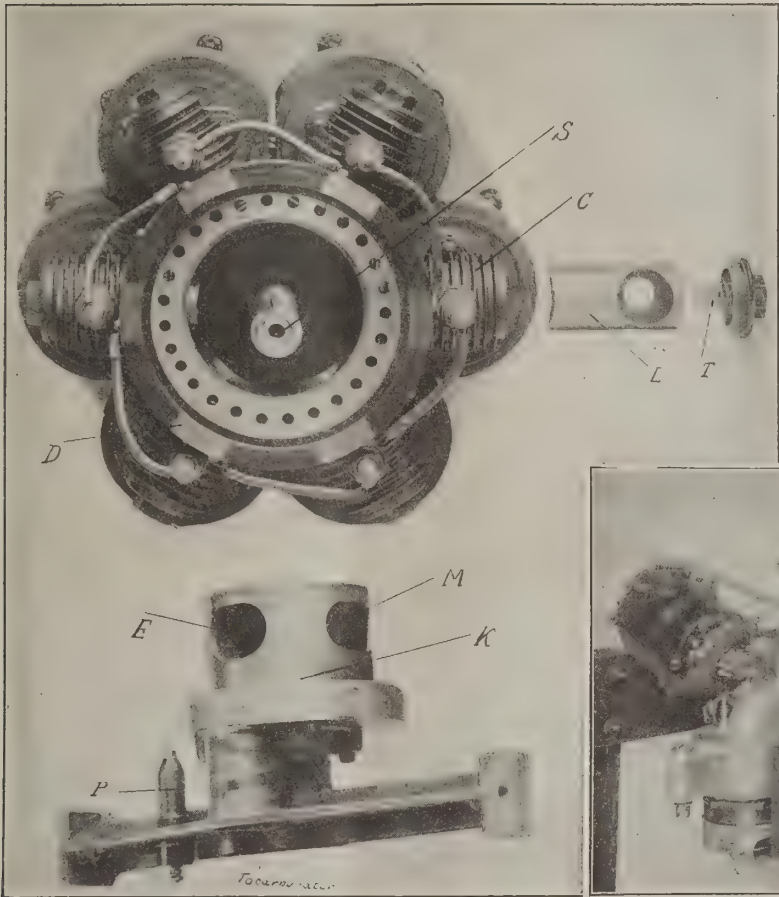


Fig. 15.—Distributing Device of the Trebert Engine. S, shaft; C, combustion chamber; L, sleeve fitting within C and held by spring T against the casting K; E, intake port; M, exhaust port; P, magneto contact, rubbing against distributor D.



Fig. 16.—Trebert Revolving Engine. Notice how much more compact this type of engine is than the radial. The horizontal cylinders simplify lubrication.

the same way as those of the Trebert. The chief difference lies in the mechanism replacing the cranks and bevel gears. Reference to Fig. 18 will show that the pistons are connected by means of rods with ball and socket joints to a spider-plate which revolves with the cylinders. As the engine is revolved the pistons will reciprocate in the usual manner owing to the variation of the distance between each cylinder head and that

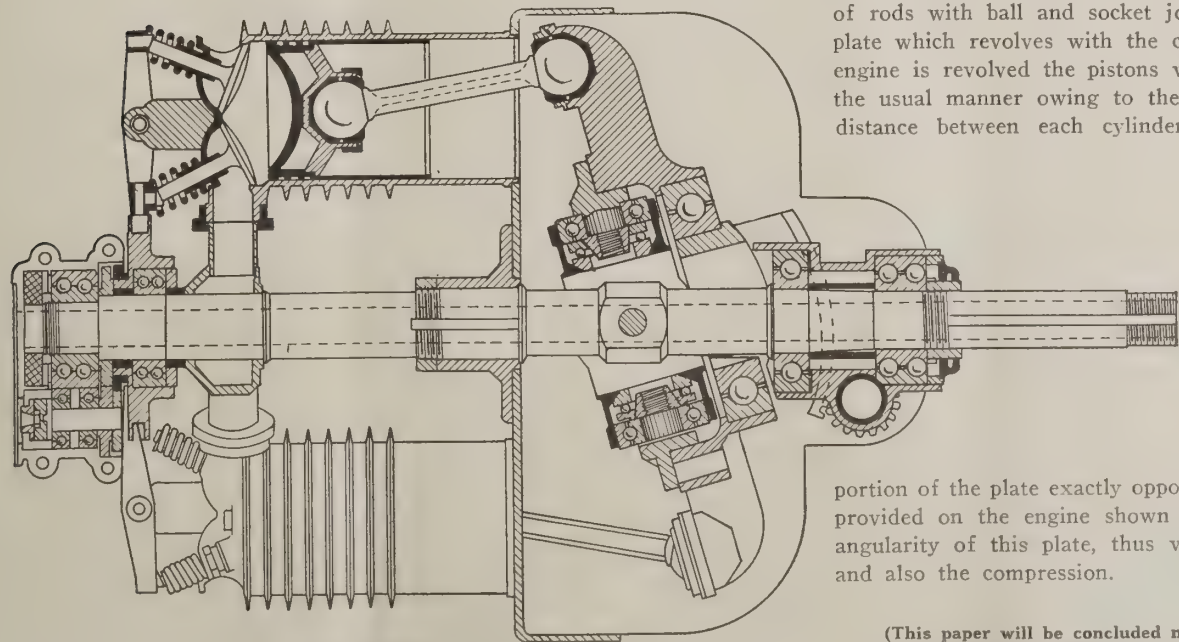


Fig. 13.—Cross-Section of the Macomber Revolving Engine.

portion of the plate exactly opposite it. Means are provided on the engine shown for changing the angularity of this plate, thus varying the stroke and also the compression.

(This paper will be concluded next week by a table of the principal specifications of ninety-four aeronautical engines.)

\*A paper presented before the Society of Automobile Engineers, June, 1915.



## The Paul Schmitt Variable Angle of Incidence Biplane

By Walter H. Phipps



**A** PARTICULARLY interesting machine, especially in these days when the call is for efficient machines capable of carrying large loads at high speeds, is the Paul Schmitt variable incidence biplane, which made its debut in France just before the war started by breaking thirteen world's records in rapid succession.

This number of world's records made in so short a time is ample proof of the worth of the Paul Schmitt biplane and especially of the value of changing the angle of incidence for weight carrying and altitude work.

While it has long been realized that changing the angle of incidence on machines in flight would have certain advantages, especially as regards climbing and speed range the constructional features involved have led most manufacturers to shun experiments in this line. In the Paul Schmitt machine, which as may be seen from the accompanying photographs and drawings is by no means a small one, the difficulty has been very simply and effectively overcome in a manner which well lends itself adaptable in a strengthened form of course, to machines of very large size, hence it should prove of interest to all American constructors, who are alert to continually improve the efficiency of their craft. For big weight-carrying machines where it is desirous of rising with extremely heavy loads this system appears to have special advantages, permitting as it does a take off at low speed with the wings set a big lifting angle, which can be decreased for speed when the machine has reached a safe height.

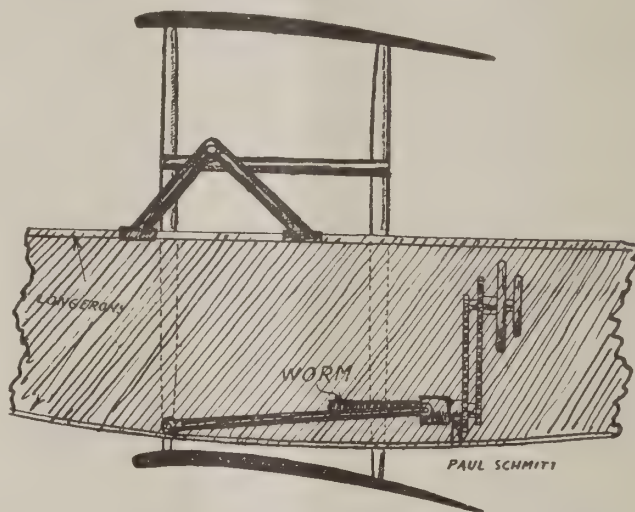
The fact that there was only one aviator who was trained to fly the machine when the war broke out and that he was brought down by German shell when flying low well inside the German lines prevented the actual worth of this machine being extensively demonstrated, but nevertheless was conclusive enough to show that for weight carrying it was without an equal. The fact that the company was not prepared to manufacture on a large scale and that there were no aviators trained to fly it probably prevented the Paul Schmitt machine from taking the place in the war it undoubtedly deserved.

Now that the big weight-carrying machines have so conclusively demonstrated their worth, it is not surprising to learn that the company has turned its attention to manufacturing these machines in both the pusher and tractor types.

Since the principle of varying the angle of incidence has been proved so effective, particular interest attaches to the method in which this is accomplished. From the accompanying photographs and drawings it will be seen that the main plane cellule forms a separate unit independent of the fuselage which passes between the planes without touching them. It is

presumed, though no detailed information is on hand, that in the pusher type now building, the planes are similarly independently mounted on the short cabin or fuselage and that the tail riggers attach directly to a suitable structure built out from this cabin so as to be independent of the main planes. The following description is taken from our excellent contemporary English "*Flight*."

Attachment to the fuselage is by a single transverse tube, resting in ball bearings on the apices of two inverted steel V



Method of changing the angle of incidence of the main planes.

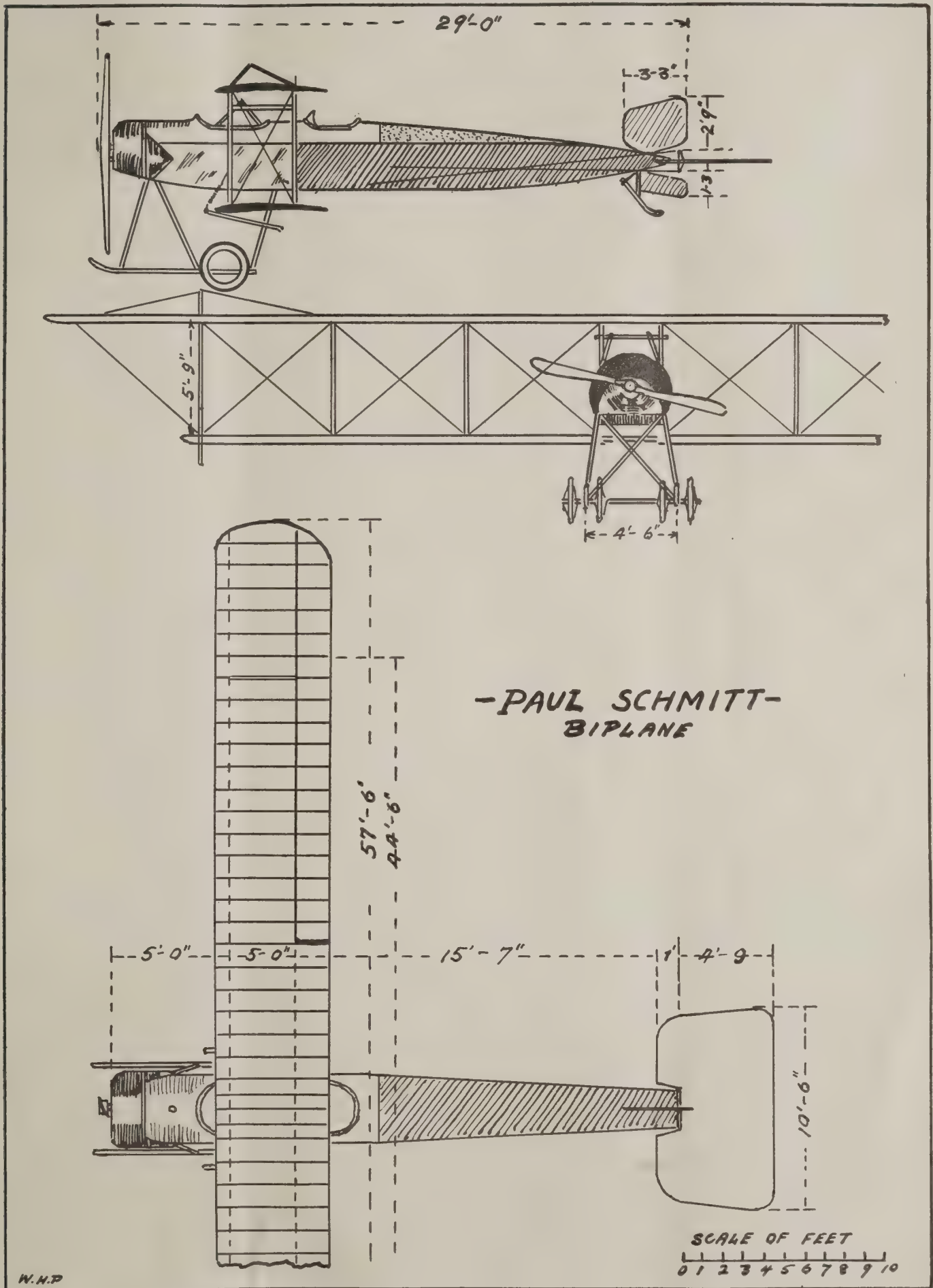
pylons, which are bolted to the top longitudinals of the frame. The ends of the transverse axis are rigidly attached to two fore and aft tubes secured to the inner pair of interplane struts. These are connected top and bottom by transverse steel tubes, and pass inside the body, running through slots in the top covering. In this way it will be seen the wings are free to rotate around the transverse axis until the inner plane struts touch some member of the body. They are prevented from doing so by a large nut working on a threaded shaft mounted longitudinally on the floor of the body. This

(Continued on page 283)



Three-quarter rear view of the record breaking Paul Schmitt biplane. Note the swiveling main planes, large fuselage and big balanced elevator.

Scale Drawings of the 160 H. P. Paul Schmitt Variable Incidence Biplane





# ANEROID BAROMETERS IN THE MEASUREMENT OF ALTITUDES

By P. RICHARD JAMESON, F. R. Met. Soc., F. R. S. A.

One of the most necessary instruments, and one of the least understood, is the altitude barometer as used in aviation. There are many of these on the market of many different grades, of many different types and yet not one of these is made in the United States.

The manufacture of such instruments is in the hands of the Europeans, undoubtedly due to the fact that each instrument has to be individually constructed and hand-made throughout—a kind of work factories here do not cater to. We are told it is not possible even to make these up in dozens, except as regards their cases, indicators, glass fronts, etc. The "vitals" are individual, both as regards construction and adjustment. Great Britain undoubtedly turns out the best instruments, while many from France are deserving of merit. I have neither seen nor examined any Swiss or German instruments that would pass a satisfactory test, undoubtedly due to the fact that all their manufacturers in the altitude barometer line run to the cheap article.

Ordinary aneroids provided with altitude scales such as tourists carry have been often used to determine the height of a flight. Needless to say, their results will not bear critical investigation, for these particular types are not adapted for work where rapid changes in atmospheric pressure take place.

Again, the construction of their dials is of a character that may cause many people to unknowingly use them incorrectly. A climb of hundreds of feet a minute of which certain aircraft are capable demands a differently constructed barometric mechanism than does a flight which consumes two or three hours in attaining the same elevation.

Altitude barometers are operated by a diaphragm opening or closing as changes in the weight of the air occur. There is a certain "lag" on all aneroid barometers, and it is impossible to absolutely eliminate it. The metal used in the diaphragm is of a very very fine gauge. In delicate instruments it is around 0.004 inches in thickness. This is corrugated and is circular in form, so that the corrugations offer elasticity. This diaphragm soldered around its edge appears as a small box. The air can now be exhausted from it. It naturally collapses, but a strong spring is fitted above it which draws it open again, keeping it in balance with the air. Any greater air pressure closes it, while a lesser air pressure enables the spring to open it more. This creates an up and down motion as the mechanism is taken to different air levels. By means of a series of levers this motion is transmitted to the dial. It is a well known fact that all altitude aneroid barometers need "recovery" after an ascent, for the hand will not often return immediately to its starting point, but will sometimes "recover" considerably in a few minutes, full recovery taking some hours, more often a day.

This is due to the "stress of metal" in the diaphragm; it is elastic, but has opened so rapidly that it has become somewhat strained and on its return to a low level remains "stretched" for some time, the amount differing in all instruments.

It is obviously necessary therefore to use an altitude instrument whose diaphragm is adjusted in such a manner that the maximum of "stretch" or "stress" has been removed by mechanical or other methods.

I have used altitude aneroids a great deal and have had considerable experience with them for the past twelve years and know this "stretch" and "rest" process to be a fact, and also that it varies with the instrument.

In ascents on Mount Cook, New Zealand, to elevations exceeding 10,500 feet; in the Himalayan Mountains in India to elevations exceeding 7,000 feet, both places showing extremes of temperature, I have found my ordinary pocket (3-inch) altitude barometer checked up very correctly, for no other reason than because it is a good instrument and because the ascents were slow and the "recovery" process did not occur, or else was taken care of in the course of the naturally slow ascent and descent. In returning to any base it has invariably checked up accurately with standard instruments.

It was set in San Francisco in November, 1909, by Prof. Alexander McAdie of the U. S. Weather Bureau and two years later in England; it showed an error of only 0.02 inches, although it had been in continual use and in very high elevations.

When used in an aeroplane it shows a considerable deviation from standard readings when it is brought to a low level, proving that it suffers as all altitude instruments from "stretch," but after a "rest" it completely recovers itself.

Special "aeroplane barometers" are constructed in some way

to offset a great deal of this bothersome "stretch" and as a consequence they return to, or nearly to, their zeroes. I have in my possession a 4-inch instrument by Short & Mason, London, reading upwards to 7,000 feet, certified at the National Physical Laboratory, showing a maximum error of but 50 feet. It possesses only an equally divided altitude scale, which is really the one in which a pilot or observer is interested. As this scale is made to revolve, the indicator can always be adjusted so that it starts its indications from the "O" feet reading.

This is impossible without error on the smaller size aneroids or types constructed for tourists to carry in the pocket, as their scales are unequal in division, and are correct only when the "O" feet of the altitude scale or the "31" inch mark on the pressure scale are coincident. Should the scale be moved from this point the error is against the aviator going in for "altitude," as the results indicated by the aneroid are less than the actual results attained by the machine. If the scaling on an instrument of this type be carefully examined it will be found to contract considerably in distance towards the end, so if the start of it or the "O" feet be moved from the correct point (which is "31" inches on the pressure scale) the value of it is all thrown off; that is, the indicating hand will be working in a part of the scale which should be more contracted in its divisions or vice versa.

Recording altitude barometers are being slowly but surely perfected. The manufacturers abroad are constructing on the experiences of aviators over there. The idea of a small, cramped miniature article is sliding into oblivion, for those in a position to know realize that such instruments are useless. The Navy Department has in use instruments measuring about six inches in length and which record on a six-hour clock-drum to altitudes of 8,000 feet. They weigh but two pounds, which admits of a mechanism that can be depended upon for accuracy and stability and that will not "vibrate to pieces." As the length of the paper chart is about 8½ inches, the detail of the record can be studied with ease. Like small and thin model watches, the miniature altitude recorder was not reliable and has had to give way to something which made accuracy impossible.

Barometers reading to excessive altitudes are frequently applied for, but it is doubtful if their "rating" is correct, for I believe there are but two test machines in the country capable of reading above 25,000 feet, so the consequent "accuracy" of such aneroids must be accepted with reserve.

It is strange, but nevertheless a fact, that jewelers are called upon to and often do effect "repairs" to aneroids. My experience has been that the charge was really all there was to it. Jewelers have no mercurial test machines, know nothing of rating an aneroid, usually oil the pivots, which is the very worst thing possible for them, and in putting it together, the position of the adjustments is so changed that, while the aneroid hand may vibrate when tapped and "move" under certain conditions, it has no accuracy whatever and no indications can be relied upon.

The test for indicating and recording aneroids is the same. The instrument is placed under a glass receiver in connection with a standard mercurial barometer. Before starting the test the instrument is made to agree with the mercury barometer as regards its reading.

The air is exhausted from the receiver, and due to the lessening pressure the aneroid mechanism operates, and the hand indicates at some point on the dial or chart. The mercury barometer changes also and gives the correct reading. If the aneroid under test does not agree with the mercury barometer a note is made of it and further tests carried on.

On getting the aneroid into "free" air again, certain parts of its mechanism can be adjusted to overcome the errors indicated under test, and it then again has to be tested. These tests are carried on until both instruments agree.

The accuracy of a test is dependent on the workman's knowledge of the relation of one part of the mechanism to another part; the lag of the metals and their recovery, the effect of temperature and many minor details too numerous to be gone into in this space.

In my experience I have come to the conclusion that altitude instruments of all styles should be considered in the larger diameters, for, not only are they more accurate, but on account of the greater size all the adjustments, fittings, and delicate working parts can be made of length which admits of correct rating and allows the production of an instrument the results of which need never be criticised.





# FOREIGN NEWS

Edited by L. d'Orcy



## Austria

A report from Amsterdam says that Austria has placed an order for three Zeppelin airships to be used in the campaign against Italy.

## France

The latest reports issued by the French War Office record the continued activity of the French bombarding squadrons, which are beginning to raid German territory and strategic enemy junctions and depots day after day, inflicting heavy damage and returning practically unharmed. These raids, effected on a large scale, prove that the French air fleet now possesses a great number of powerful bombarding aeroplanes of long cruising radius, whose raids German aircraft do not seem to be able to prevent.

An interesting fact is disclosed by one of these reports, to the effect that a bombarding squadron was accompanied by armed scouts which put three enemy aeroplanes to flight; this is the first instance that a tactical co-operation in aerial warfare has been officially recorded.

The official reports of last week's aerial operations are the following: On the night of July 19th one of our dirigibles dropped twenty-three bombs on the military station and munition depot at Vigneulles and Hattonchatel. It returned safely.

Four of our aviators dropped forty-eight shells on the junction station at Challerange to the southward of Vouziers.

On July 20th a squadron of six aeroplanes bombarded Colmar station. Eight shells of 155 millimetres (six inches) each and eight shells of ninety millimetres were dropped on railway buildings and trains. It has been established that damage was done both to the main station and freight station. None of the shells fell on the city. Our machines returned undamaged.

On July 21st two aeroplanes in the afternoon again bombarded Colmar station (in Upper Alsace). Four shells of 155 millimetres and four of 90 millimetres fell on the tracks.

Thirty-eight aviators bombarded the station of Conflans-en-Tarnisy, an important junction. Three shells of 155 millimetres each and four of 90 millimetres fell directly on the station. The engine shed was struck by a 155 millimetre shell. Three enemy aviators were put to flight by our scouting aeroplanes accompanying the squadron. One enemy machine was compelled to land.

The same night French aviators dropped eight bombs of 90 millimetres and four 155 millimetres on the station of Autry, to the northeast of Binarviolet, in the Argonnes.

One of the French flying squadrons employed on bombardment duties on July 22nd dropped 28 shells on the railway station at Conflans, in Jarnisy, and forced two German aeroplanes to alight in their lines.

## Great Britain

According to private advice three German Taubes were destroyed a few days ago off the mouth of the Thames by twelve British aeroplanes.

According to the stories the Taubes were sighted in time for coast observers to call for British aid, and as the German machines approached the mouth of the Thames four English aeroplanes appeared. The Germans ascended to a great height, but were overtaken by the British aviators, who destroyed two of them in midair. The third was damaged and fell into the sea.

## Germany

In an aerial fight over the Muenster Valley, Berlin reports three German airmen gained a victory over three adversaries, of whom two were forced to descend into the Valley of the Thann. In the region of Camp Chalons German aviators attempted to bombard the villages and railway stations where supply stations had been established.

## Holland

Dutch newspapers express considerable annoyance concerning a new order issued by the Netherlands government prohibiting Dutch reporters from mentioning within twenty-four hours the passage of Zeppelin dirigible balloons in the neighborhood of Holland territory.

## Italy

The Ministry of Marine issued on July 18th the following review of aerial operations:

"Since the last statement, of July 7th, the navy has intensified its action in co-operation with the aerial service against the enemy's coasts in the lower and upper Adriatic.

"Among the most remarkable aerial operations must be cited the bombardment by one of our dirigibles on the 17th of Trieste. The technical establishment was badly damaged in the previous raid of July 4th. This time bombs thrown on these important workshops started a fire so extensive as to be visible twenty miles away.

"Our sea planes dropped bombs on Austrian destroyers protecting Fasana Canal, near Pola. Two other seaplanes bombarded the battery near the Salvore Lighthouse on July 14th. One of our dirigibles bombarded with excellent results the Trignano Station and Trieste railroad yards at Monfalcone on the 16th.

"On July 17th an enemy sea plane belonging to a small squadron which flew over Bari and Barietta was captured, with two officers."

The Venice correspondent of the *Echo de Paris* states that a squadron of seaplanes manned by French naval pilots under the command of Lieut. Conneau ("Andre Beaumont") is stationed at Venice for protecting that city against Austrian air raiders. The activity of this squadron has proven so effective that since its arrival on May 28th no enemy aircraft has attempted to attack the City of the Doges. This report incidentally explains why it was the Italian and not the French Minister of Marine who announced the destruction of an Austrian submarine by the French Naval Sub-Lieutenant Rouillet, the French seaplane squadron being undoubtedly under the order of the Italian Navy.

A report from Rome states that the Italian authorities having seized the German steamer *Bayern* in Genoa, it was found that the cargo included two aeroplane sheds in four sections, four biplanes with wireless outfit and 1000 aircraft bombs. The *Bayern* was bound for the Far East when the war broke out and compelled her to take refuge in the Italian port, where she was seized when Italy joined the fortunes of the Allies. The aeronautical outfit she carried on board was probably intended for Kiao-Tcheou, where the Germans had but one monoplane when the Anglo-Japanese forces besieged and took the fortress.



Allied aircraft bombs as German trophies. On the left is shown a 155 m.m. calibre French air torpedo, five and one-half feet long and weighing 92½ pounds; on the right there are two smaller bombs which were found on a British aeroplane that was brought down within the German lines.

(Courtesy of Flying.)





# MODEL NEWS

Edited by WALTER H. PHIPPS



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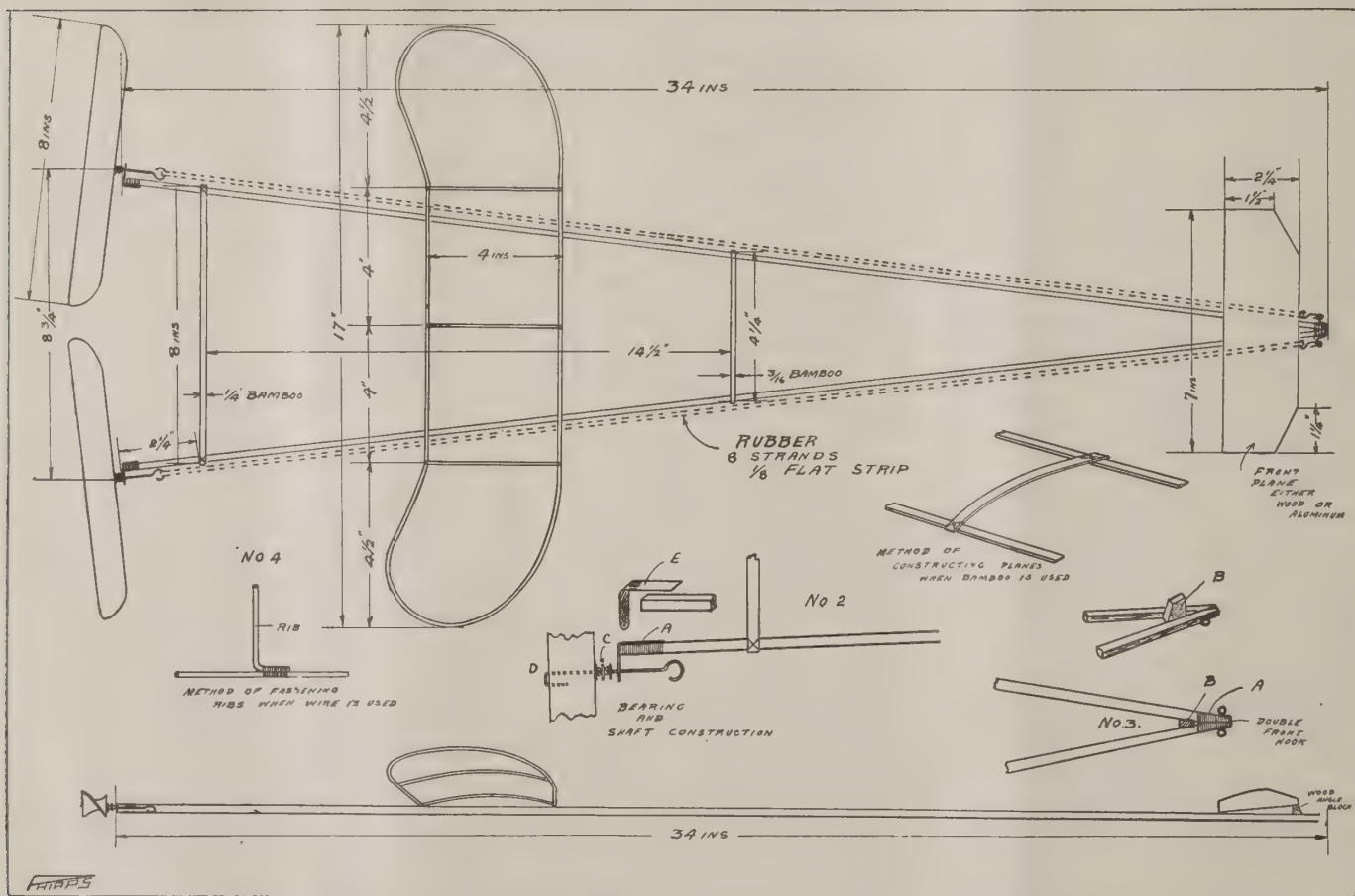
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## Working Drawings of the Arthur E. Nealy Distance Model



Description of Machine.—The top view shows the dimensions and shapes of the two planes. Make a pattern by laying off the dimensions given, drawing the outline as nearly like the plan as possible. The rear or main plane can be constructed either of No. 16 gauge piano wire, or built up of split bamboo, as shown in one of the sketches. This is braced by either three steel or bamboo ribs as desired, bent to a camber of about one-quarter inch. Covering is either light aero silk (sewed or glued on) or Avion fibre paper, treated with model aero varnish. The front plane is made of either light wood or aluminum sheeting and rests on a quarter-inch high elevator block to give it the proper lifting angle. Both front and rear planes should be bent to a dihedral angle, as shown in the side view. They are both fastened down to the motor frame with tightly stretched rubber bands which hold them securely in place, but permit of their being moved backward and forward until the proper adjustment is secured. This is very necessary to secure good results. The motor base is made of  $\frac{1}{4} \times \frac{1}{8}$  inch spruce or white pine, and the joints should be firmly fastened by wrapping and binding with strong thread and well covered with glue.

Details.—No. 2A: Method of binding propeller hanger to motor base. C: Washers with small metal rings between for bearings. D: Method of fastening propeller shaft to propeller. E: Propeller hanger constructed of light sheet brass. No. 3A: Method of binding motor base with thread or steel wire. B: Elevator block, bound and glued in place. No. 4: Method of holding steel rib and frame together with wire while soldering.

### Great Enthusiasm Evidenced in National Model Aeroplane Competition

According to reports being received daily at the Aero Club of America the Big National Model Aeroplane Competition promises to be a great success.

Already all the leading clubs report that their members are working feverishly to get their models in shape for the first contest, which is to be held during the latter part of August.

In this issue we publish a complete scale worked drawing of a good distance flyer constructed by Arthur E. Nealy of the Illinois Model Aero Club, which should serve as a basis for those who have had only a limited experience in model flying and yet who are desirous of entering the contest.

The official complete entry blanks and prizes of the contests have just been published by the Aero Club of America and have been sent to the leading clubs. Any clubs which have not received copies of these rules and entry blanks are urged to communicate immediately with the Aero Club of America 297 Madison Ave., New York City, requesting they receive copies. Again we urge everyone interested to join a club or form clubs of their own, so as to be sure and get into the contests, which are going to be the biggest events in the history of model flying. For particulars regarding the organization of clubs address the Model Editor, *Aerial Age*.

#### Aero Science Club

By G. A. Cavanagh

On August 22nd, the day when the first of the series of the Aero Club of America contests commence, Mr. John McMahon and Mr. Frank Schober will compete against each other for the American record for models using compressed air motors. Both these members are working on new machines for the event, which promises to be a lively affair. Good records with this class of models have already been made by them, and it is therefore possible that a world's record may be made. In addition to this event a large gathering of model flyers is expected to take part in the Aero Club of America contest, which promises to be the largest ever held in the vicinity of New York City. All those who desire to enter these contests are requested to make application to the Secretary, 29 West 39th St., New York City.

#### Illinois Model Aero Club

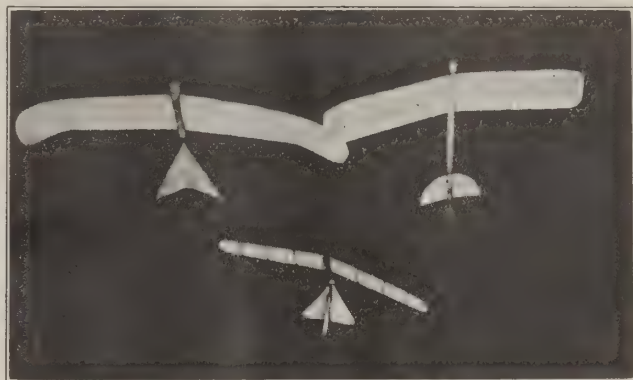
Enthusiasm such as has not been seen since the days of the 1912 model cup contests is being developed in the coming National Model Aeroplane Contest distance meets. Nearly every member of the I. M. A. C. is putting forth his best efforts to bring the Villard Cup to Chicago.

Among the builders of the club, who are conceded the best chances of winning in this district, are: Mr. Tommy Hall, who is developing a large low flying distance model, capable of great duration; Mr. Emil Laird, who believes in a medium sized, exceedingly speedy model of short duration; Mr. Arthur E. Nealy, who compromises by using a very small

light and fast model, and Mr. Ellis Cook, who also believes in distance by the duration route. Other veterans who will be in the running are: Mr. Ward Pease, Lindsay Hittle, A. Collins, D. Lathrop, Charles Arens and S. Sendell.

Saturday a distance meet will be held to determine the winner of Miss Katherine Stinson's prize of a ride in her new tractor biplane. All members of the I. M. A. C. who have previously had rides are excluded from the competition, making the interest more keen amongst the other members. Up to the date of this meet the eligible flyers were out practicing daily in effort to be prepared to win the ride.

The Milwaukee Model Club informs us that five members will be in Chicago, August 14-15 to compete for R. O. G. honors of the Middle West.



Three splendid model gliders constructed by A. K. Barker, of Brooklyn. Lengthy flights can be made with these motorless models when started from a hill.

#### Buffalo Model Aero Club

By W. J. Webster

The meeting of the B. M. A. C., which was held on Wednesday evening, July 21st, at the club's rooms, was attended by the majority of the members and a few visitors. Three new members were admitted into the club.

The field meet was held Saturday afternoon, July 24th, from 2.30 to 6.30, for the purpose of trying new models, as quite a number have been constructed by the members. Attempts were made to break the club records already established.

Mr. Weyand flew two new long-distance models, and Mr. Schreier gave exhibitions with a new type R. O. G. model.

A few articles were added to the club's constitution, and it was decided to recognize the officers as an entertainment committee, whose duty it will be to appoint a member to entertain at the following meeting with something concerning models.

A "question box" was begun, the object of which is to help the members solve their model perplexities. The meeting wound up when a general discussion concerning the details of model construction followed a question asked through the "question box," after which the meeting adjourned, at 10:15 p. m. For particulars regarding the club, write to W. J. Webster, 787 Delaware avenue.



The splendid new compressed air-driven model, constructed by Messrs. Funk and Schober, of the Aero Science Club, who claim to have made some lengthy flights with it. Mr. Schober has challenged Mr. McMahon to compete for the American record for compressed air-driven models at Garden City, N. Y., on August 22d, the day when the Aero Science Club will hold its elimination trials for the Aero Club of America contests.



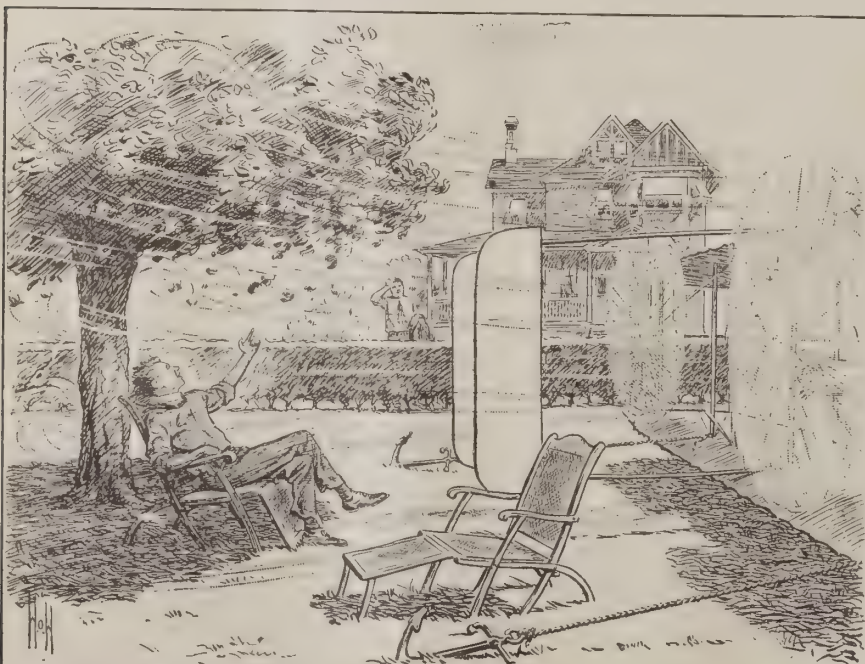


Aeronitis is a pleasant, a decidedly infectious ailment, which makes its victims "flighty," mentally and physically. At times it has a pathologic, at times merely a psychologic foundation. It already has affected thousands; it will get the rest of the world in time. Its symptoms vary in each case and each victim has a different story to tell. When you finish this column YOU may be infected, and may have a story all of your own. If so, your contribution will be welcomed by your fellow AERONUTS. Initials of contributor will be printed when requested.

#### Shakespeare on Flying

In "*King Lear*," Act II., Scene 4, the King says:—  
"I choose to wage against the enmity of the air,"  
and in Act IV., Scene 6, he says:—  
"Oh, well flown."  
(This suggests stunt-flying at Hendon.)  
In "*Romeo and Juliet*," Act II., Scene 4, Mercutio says:—  
"Follow me. . . till thou hast worn out thy pump"  
(which seems to foretell the complications of pressure feed.)  
In the same scene Mercutio says:—  
"Thou desirest me to stop in my tale against the hair."  
ROMEO: "Thou wouldst else have made thy tale large."  
MERCUTIO: "O thou art deceived, I would have made it short."  
(This suggests to my mind an illiterate aeroplane constructor discussing streamline fuselages with his works manager.)  
In "*The Tempest*," Act I., Scene 1, Gonzalo cries:—  
"Now would I give a thousand furlongs of sea for an acre of barren ground, long heath, brown furze, anything. The wills above be done, but I would fain die a dry death."  
The plaint of a novice in a seaplane lost in a fog.)  
In "*King John*," Act III., Scene 2, there comes the passage:—  
"Now, by my life, this day grows wondrous hot;  
Some airy devil hovers in the sky,  
And pours down mischief."  
(What with petrol bombs and arrows, it does get a bit hot in the trenches.)  
In Act III., Scene 1:—  
"so great,  
That no supporter but the huge firm earth  
Can hold it up."  
(Evidently the. . . aeroplane [excised by the Censor].)  
"Hail you anointed deputies of heaven."  
(They should have had more efficient oil guards fitted.)  
Act II., Scene 1:—  
"Our cannons' malice vainly shall be spent  
Against the invulnerable clouds of heaven."  
(Ineffectiveness of anti-aircraft guns.)

Who else would soar above the view of men."  
(This is clearly a misreading, for "An ordinary pitch will make him fly," but even so the meaning is rather obscure. Forward the propeller expert.)  
"*Two Gentlemen of Verona*," Act III., Scene 2:—  
"Because we know, on Valentine's report."  
(A successful reconnaissance by a well-known R.F.C. pilot.)  
"*Measure for Measure*," Act I., Scene 1:—  
DUKE: "We would not have you warp."  
(Quite right! Balanced ailerons are better practice.)  
"*Taming of the Shrew*," Act IV., Scene v:—  
"As we watch these kites."  
"*Twelfth Night*," Act II., Scene 3:—  
"I hate it as an unfilled can."  
(Aviators are fond of borrowing each other's petrol.)  
"*Titus Andronicus*":—  
DEMETRIUS: "Go to . . .  
Till you know better how to handle it."  
CHIRON: "Meanwhile, sir, with the little skill I have  
Full well shalt thou perceive how much I dare."  
(Every instructor knows this type of pupil.)  
Act II., Scene 2:—  
"And she shall fill our engines."  
(Hardly woman's work this, one would have thought.)  
"*Troilus*," Act IV., Scene 1:—  
"That will fly with his face backward."  
(To keep the sand out of his eyes?)  
Act II., Scene 3:—  
"Why will he not share the air with us?"  
(This is what the Taube pilots say when one of our aviators goes for them.)  
Act I., Scene 3:—  
ULYSSES: "Oh, give me ribs of steel."  
(This is a matter of opinion.)  
"*Cymbeline*," Act III., Scene 3:—  
BELARIUS: "When you above perceive me like a crow."  
(He was evidently going for the height record.)  
"Enough of flight."  
(Perhaps you're right.)



"Come on over and enjoy the breezes."

(Courtesy of Life.)



(Continued from page 476)

nut is connected by two pivots to the rear pair of interplane struts. On the rear end of the longitudinal shaft are carried two concentrically mounted sprockets from which chains pass to two hand wheels in front of the pilot. Rotation of one wheel causes the shaft to revolve slowly, whilst the other is so geared that a more rapid movement is obtained. As the shaft rotates it displaces the threaded nut in a forward or backward direction, and with it the lower ends of the interplane struts, to which it is pivoted. The amount of movement is such that the main planes swing through an arc of from 4 to 12 degrees.

By suitably varying the power the machine can be flown at speeds from 25 to 70 m.p.h., maintaining a horizontal flight path, whilst if it is desired to climb quickly, the planes are set at a large angle of incidence and the engine opened out.

Apart from the variable incidence, this machine is interesting on account of the fact that it is built practically throughout of steel. The body is built up of steel tubes autogenously welded. From the nose to a point just behind the seats the body is of rectangular section, whilst to the rear of this point the lower longitudinals converge so as to form a triangular section. In the stern of the body the longitudinals are connected to a short transverse steel tube which forms a pivot for the elevator. This member is unusually large and is partly balanced, no doubt in order to make it easier for the pilot to operate, a feature which is almost a necessity in a machine in which the elevator plays such an important part in the speed variation. In the nose is mounted between double bearings the 160 h.p. Gnome engine, which is partly covered by a shield of a similar form to that employed on the Morane-Saulnier monoplanes. Behind the engine are carried the tanks, and to the rear of these is the passenger's cockpit, which is extremely roomy, and which is entered through a door motor car fashion. Still further back, and on line with the trailing edge of the planes, is the pilot's seat. In front of him are the controls, which are of the usual type, *i. e.*, a wheel operating the *ailerons* and elevator, and a foot bar for the rudder.

The landing carriage, although not unduly complicated, is immensely strong, a not unnecessary requirement in a machine carrying at times a useful load of over 1,800 lbs. The accompanying sketch is self-explanatory; suffice it to say that the landing carriage is built of steel tubes throughout. The chief characteristics are: Weight, empty, 1,430 lbs.; area, 480 sq. ft.; minimum speed, 25 m.p.h.; maximum speed, 70 m.p.h.

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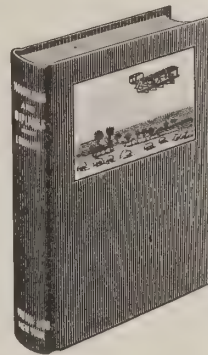
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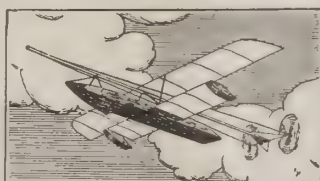
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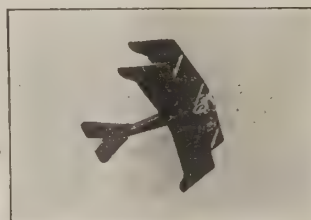
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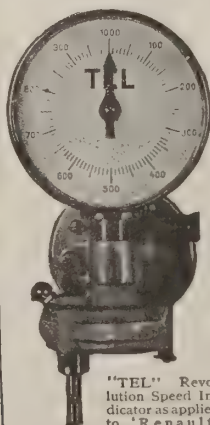
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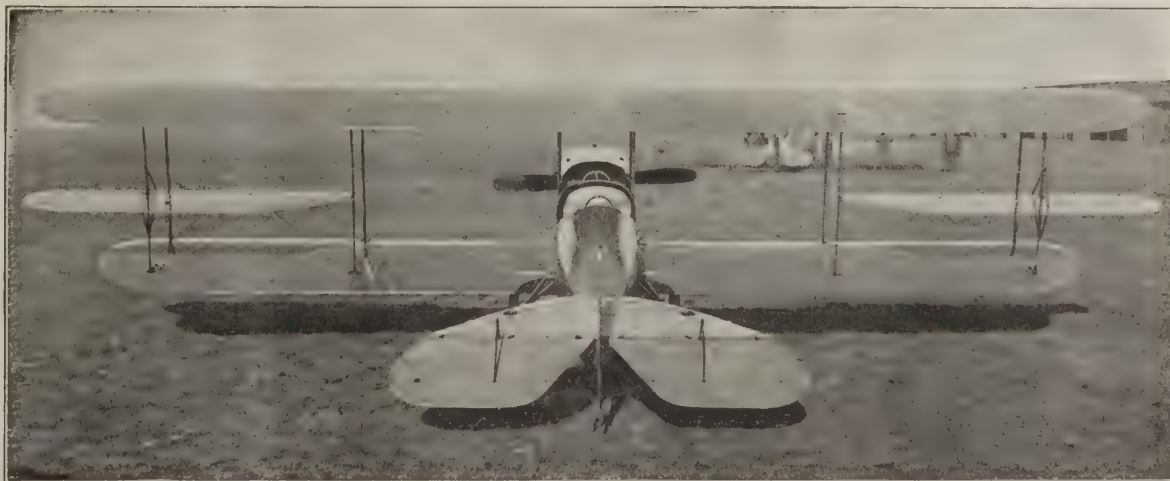
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## WEEKLY

VOL. I. NO. 21.

AUGUST 9, 1915.

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**Russian Defeats Due to Lack  
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PUBLISHED WEEKLY BY THE AERIAL AGE COMPANY, Inc., 116 West 32nd Street, New York City

Entered as Second-Class Matter, March 25, 1915, at the Post Office at New York, N. Y., under the Act of March 3, 1879

VOL. I.

NEW YORK, August 9, 1915

No. 21

### Russian Defeats Due to Lack of Aeroplanes

THAT Russia has committed the same mistake that Germany committed in the early part of the Belgian campaign, and that the Russian defeats are the result of lack of aeroplanes on the Russian side, for reconnoitring, controlling artillery fire and preventing the German air scouts from mapping the Russian possessions, is shown by reports which have reached the Governors of the Aero Club of America.

These reports, which have been received from a score of reliable sources since beginning of the war, show how the comparatively small German forces, but possessing a large number of aeroplanes and experienced aviators, have had such a tremendous advantage over their foe that they have been able to advance through difficult country and take fortified places in spite of the overwhelming numbers of the Russian Army.

In a summary prepared from reliable reports by Mr. Henry Woodhouse, a Governor of the Club, and Managing Editor of *Flying*, the official publication of the Aero Clubs of America, Illinois and Pennsylvania, and of the American Society of Aeronautic Engineers, the following facts are given:

"The success of the Germans, who, with 1,200,000 men, have succeeded in forcing the Russian Army, which has more than twice as many men, to retreat, abandoning strongly fortified places, has been due entirely to

1. Failure on the part of the Russian Army Chiefs to recognize the possibilities of employing aeroplanes to good advantage for reconnoitring, directing artillery fire; co-operating in the work of cavalry and infantry, and in protecting the Russian lines from the prying eyes of the efficient German air scouts, who, unchallenged, not only mapped, but secured detailed photographic plans of the Russian positions and distribution of forces.

2. Failure on the part of the Russian Army Chiefs to recognize the necessity of shifting of front and of making strategical moves to offset the advantage gained by the enemy through having more and superior aeroplanes and aviators.

3. The small number of Russian aviators, and their lack of experience, due to their not having maneuvered with the troops before the war.

4. Lack of aeroplanes to co-operate with Russian artillery in directing gun fire.

5. Lack of sufficient numbers of aeroplanes and equipment at the disposal of the Russian aviators, which would have enabled them to operate with maximum efficiency.

Conditions very opposite to the above prevailing

on the German side, the Russians were at a decided disadvantage, despite their larger number.

At the beginning of the war there were about eight hundred aeroplanes in Russia, and about one thousand in Germany. But Germany had about one thousand fully trained aviators, whereas Russia had only about four hundred, most of whom had only qualified as pilots and had not had any experience after that in military work. The aeroplanes available in Russia were of many types, with different kinds of motors and different controls, and men who had only operated one type of machine for a short time were not able to pilot other types. Many of the machines were light monoplanes, equipped with only fifty h.p. motors, and had to be discarded.

The few large Sykorsky aeroplanes could not be used for a time because they required large fields for starting and landing. Aside from this, they are much slower than the German machines, and are easy targets for anti-aircraft guns. For these reasons, the ten Sykorsky biplanes that have been in commission during the past six months could not render maximum service.

Whereas German aviators have each had an average of four aeroplanes to be "tuned" up. The Russian aviators, lacking experience, went out only occasionally, and saw little, the German aviators maintained a constant air patrol, and brought back detailed accounts and photographs of the Russian positions.

One of the reports, received from Mr. J. B. Gilder, who got his information in letters from Germany, supplies an interesting bit of information, and gives an idea of the part played by aeroplanes in the general Austro-German advance, which began last May. The needed reinforcements for the successful Austro-German frontal attack on the Russian fortified line between Tarnow and Gorlice were so cleverly divided and concealed that neither the Russian scouts or aviators could obtain a clear picture of the extent or importance of the movements which were being carried out.

On the other hand, the fact that the Russian front had undergone only a slight change during the long period of trench warfare was of great advantage when it came to distributing and placing the German and Austrian artillery. Through the activity of the German information service, and particularly the aviators, the Russian lines were exactly known and mapped out. Hundreds of photographs were taken by the aviators, and topographically reproduced, which gave an almost unbroken and constantly up-to-date perspective of the Russian front from the mouth of the Dunajec to the Dukla Pass in the Carpathians. This information was of inestimable importance when the



final plans were ready for the grand assault on the Russian positions at the beginning of May.

The German aviators have been operating unopposed, while the Russian aviators have been restricted. The German gunners had had experience in operating with aeroplanes as range finders, while neither the Russian aviators or gunners had had any experience at all. In other words, the Russian Army was almost as unprepared for employing aeroplanes as the United States Army is today, with this exception—that Russia had 400 experienced aviators, whereas we have less than a dozen; Russia had about a thousand aeroplanes, while the United States Army has only ten.

Thus Russia has committed the same mistake that Germany committed at the beginning of the campaign against Belgium. Germany, then underestimating the tenacity of Belgium, did not make good use of her air scouts. She relied entirely on the overwhelming strength of her formidable army, and did not consider it necessary to employ air scouts to find the vulnerable spots and offset the advantage gained by Belgium through its very judicious employment of the very efficient Belgian air scouts. The Germans started in with a crushing preponderance of men, but played the game in accordance with plans made many years ago, with little consideration to the immediate moves of the enemy, while the Belgians, with few men, but employing a score of efficient air scouts, moved as circumstances dictated. The result was a comparatively large loss of men and an inestimable loss of time on the part of the Germans, which undoubtedly saved Paris.

Thereafter the Germans developed aviation on a large scale—which is what Russia is planning to do. Russia is now building large armored biplanes intended to carry pilot, gunner, a machine gun and a load of bombs at a speed of eighty miles an hour. These machines are of the "pusher type," and the gun is mounted well forward to afford a maximum arc of fire, and the gunner has a wide range of observation.

Russia is also ordering flying boats of the "America" type in this country. The delay, so far, has been due to the inability of the Russian Government to get aero motors of between 140 and 200 horsepower. These motors were not available in any number in the United States until the beginning of this year, but when they became available, and a number were set aside for the Russian Government, official "red tape" held up the orders for many weeks, and the motors were sold to other countries which also bought the output of the aeroplane factories for months to come. So Russia had to wait.

Reports show that the Germans did not do much bomb-dropping on the Russian lines. This confirms the indications that, after the first checks, Germany realized that a purely military campaign in such country against the Russian forces would be an unending war with temporary gains and losses on each side; and that to retain positions gained it would be necessary to immediately bring up the armies, supplies, etc., which was only possible with roads, bridges and railroads.

Therefore, the methods were changed, and the campaign became more one of engineering and less military. The Germans advanced slowly, building railroads, bridges and trenches, and always attacked in full force, with their maximum strength behind them, and direct connections with and fast transportation to all points along the front and rear.

### **Our Army, Our Navy, Our Country—Congressmen Are Our Representatives, and the Navy's \$1,000,000 is for Aeronautics and Not for Politicians**

**B**EFORE the war we looked upon the Army and Navy as organizations not particularly connected to our personal interests. Nor did we follow what our representatives in Congress did, considering that *Government* business. We were individualistic and inconsiderate.

But things have changed. We are conscious now, as we were not before the war, of the value of our defenses, and, instead of *the* Army and *the* Navy, we have *our* Army and *our* Navy.

We are also conscious of the fact that Congressmen are not individuals with a will and purpose of their own, but rather our representatives, elected by us. Our managers, as it were, whom we entrust with the management of this great, prosperous country of ours.

And so the \$1,000,000 appropriated for naval aeronautics is considered as an appropriation of *our* money, to be spent in developing the air service of *our* Navy, to improve the defenses of *our* country. Therefore the politicians who would like to get part of it to develop land and rear buildings in their own districts will have to be disappointed. Their anxiety to have the Navy build factories and manufacture aeroplanes and motors is appreciated, but their co-operation must be declined with or without thanks. We have a dozen aeroplane constructors ready, waiting, in fact, to fill the Navy's orders for aeroplanes, and not less than thirty concerns developing aeronautical motors. As the European countries are buying American aeroplanes and motors in large number for actual warfare there is no doubt about our Navy being able to get efficient aeroplanes and motors in America, and as we have already explained a dozen times there is no excuse for the Navy to even consider the matter of constructing.

And so we would suggest to Senator Nathan P. Bryan, of Florida, member of the Naval Affairs Committee, not to upset the peaceful Chamber of Commerce of Pensacola with promises to have the Navy spend its aeronautical appropriation there. He will not be able to "make good." As it would rob the Navy of so much aeronautical equipment the country won't let him.

To the Jacksonville (Fla.) *Metropolis* which runs headlines reading: "*Million Dollars to be Spent on Aviation School*" we suggest the addition of the word *not* and other modifications, making the headline read: "*Million Dollars Not to be Spent on Pensacola Aviation School, As Other Naval Centers Must Be Given Aviation Sections to Protect the Navy from Losing Its Entire Aeronautical Equipment in the Event of Fire, Storm or Other Causes.*" Incidentally forty-seven other states have contributed to this million-dollar fund.

### **No More Wars—If Every Nation Had a Congress Like Ours**

**I**F every nation had a Congress like ours, there would be no more wars. There would be no appropriations for powder, ammunitions, equipment and defenses, and the derogatory attitude of politicians of the Fitzgerald and Mann type toward the military organizations would disgust military men and lead them to find employment in other walks of life.

But other countries have not Congresses like our Congress—and therein lies the tragedy.



# THE NEWS OF THE WEEK

## Vernon Castle to Fly

It is reported that Vernon Castle, the dancer, has bought a new model Wright biplane and will go to Dayton shortly to take flying lessons, after which he hopes to join the Aviation Corps of the British Army.

Talking to a reporter, Mr. Castle stated:

"You know I am an Englishman," he said, "and, as I want to do something to help, I am going to join the Aviation Corps. I wouldn't be much good in the trenches, but I think I might make a good aviator, and they need men in that branch of the service. I have passed the physical examination, and have applied for a commission. This will be given me after I have secured my pilot's license. I will have to take some training in England before being assigned to active service.

"I wanted to do this last Spring, but the state of my finances wouldn't permit it. Now I have enough money to allow me to go."

## W. S. Luckey Flies at Peekskill

Flying in his Curtiss biplane William S. Luckey filled a date at Peekskill, N. Y. on July 27th. Luckey created a great deal of excitement by dropping cards entitling the finders to free purchases at the leading stores.

## Burnside Climbs 6,000 Feet in Aeromarine-Engined Thomas

Soaring over Ithaca, Frank Burnside, the Thomas instructor, and Fred Roberts, the Oklahoma aviator, who has purchased a 100 h. p. aeromarin-engined tractor of the Thomas Brothers Aeroplane Company, made a splendid flight on July 19th, rising to over 6,000 feet altitude.

Burnside and Roberts ascended shortly afterwards in the machine. They gracefully circled over the lake and surrounding hills and then sailed directly over Ithaca several times.

The sight of the tractor climbing higher and higher by the second into clouds until it resembled a hawk, caused a temporary suspension of all activity in the business section of Ithaca. Every one turned his eyes, watching the manoeuvres of the aviators.

When over the heart of the city Burnside and his pupil ascended to a height of 6,000 feet and stayed in the air for about 30 minutes. It was the most successful flight made thus far by the machine which has been constructed for Roberts and was the best record made here thus far for a Thomas tractor for exhibition and passenger purposes.

Roberts' machine will be ready within a few days for him to pack up and take to his home at Okmulgee, Oklahoma. He intends to do some exhibition flying. The machine is of the tractor type and has dual control.

Two inspectors are in the city looking over the machines which are being completed by the Thomas concern for various governments.

## Society Lady Takes Up Aviation at Wright School

Will society take up aviation for its exclusiveness and thrills? Miss Rose Dougan, society girl of New York, Richmond, Ind., and Denver, Col., says it will. She is a pupil of Orville Wright at Dayton, and is rapidly learning the art, "for its thrills," she says.

Miss Dougan is a niece of Dan G. Ried, capitalist of New York, and her father, Dr. David W. Dougan, of Richmond and Denver, is a retired physician of wealth. She has everything that wealth can give her, yet is anxious to manage the aeroplane, and is taking the necessary hazards as incidents of the game, she says, to make complete the interesting sum of her accomplishments and experiences.

Miss Dougan walks, rides, swims and pilots her high-powered automobile with the skill of a man. She has toured the world, using all possible means of travel. Of adventures, she has had not a few. She has ridden elephants in India, crossed Egypt on camels, guided burros over the Rockies, used llamas in the Andes, and climbed the peaks of Switzerland.

"But the aeroplane is the best" of all, she says. Nothing has given her the thrills and sensations of rides in the clouds with her noted instructor and his assistants.

"It is the greatest of all," is her summing up of experiences. "I have no fear of altitudes, and, after all, the chances of travel, of adventure, are much alike in their hazards. Why should one be afraid?"

"I have almost completed my course with Mr. Wright, and shall have my pilot's license soon, I hope. I cannot wait for the time when I, alone, shall be able to send my machine into the great heights and soar as the birds. I have always envied the birds."

## Webster Flies Cross-Country in Curtiss Biplane

In his 80 h. p. Curtiss biplane, H. J. Webster, who has been doing considerable exhibition flying for the past two years, recently made a splendid cross-country trip from Hamilton to Langdon, N. D., a distance of 75 miles. Arriving at the latter place he gave a highly successful exhibition, which aroused much enthusiasm. Mr. Webster reports that the exhibition business is better than ever this year and that everywhere he flies there is a great enthusiasm shown.

## Mills Makes a Flight at Tonawanda

Charles Mills gave an exhibition flight at the postponed Fourth of July celebration at the Tonawandas a few weeks ago, and his work was admired by thousands of spectators. Mills flew to the Lumber City from his home at La Salle in his Curtiss aeroplane. He did not make a landing and his activities in the air stirred the watchers. The Falls man at times reached a height of 2,000 feet. After the exhibition Mills flew back to La Salle. Altogether he was in the air about an hour and ten minutes.

A View of Garden City taken from the Huntington tractor biplane.







Walter E. Lees, with Mrs. J. W. Uge, aged seventy, as passenger, on the Illinois Naval Militia boat "Alice."

#### George A. Gray Flies for National Guard at Fishkill Plains

Bomb dropping demonstrations were successfully carried out by George A. Gray, the veteran Wright aviator, at the encampment of the National Guard of New York, at Fishkill Plains. In one of these demonstrations, Mr. Gray, who was sent to the camp by the Aero Club of America, dropped "bombs" in front of General O'Ryan's tent from a height of 4,500 feet, and brought home to the officers the potentiality of the aeroplane in warfare, against which our guns are practically useless.

A committee from the Aero Club of America comprising President Alan R. Hawley, Henry Woodhouse, David H. McCulloch, L. D. Gardner, and Henry A. Wise Wood, the President of the American Society of Aeronautic Engineers, visited the Camp, and stated later to a representative of *Aerial Age* that every officer of the New York National Guard is enthusiastic regarding the potentiality of the aeroplane, and hopes were expressed that in the near future the National Guard would be equipped with them.

Mr. Gray, whose aerial demonstrations were so successful at Fishkill, will take his biplane to the Vermont manoeuvres at Fort Ethan Allen, during the week, August 2nd to 9th.

#### Secretary Daniels Invites American Society of Aeronautic Engineers to Appoint Two Delegates

Secretary Daniels has invited the American Society of Aeronautic Engineers to appoint two delegates to serve as members of the Advisory Committee of which Mr. Edison is chairman. Secretary Daniels' letter to Mr. Henry A. Wise Wood, the President of the Society, reads as follows:

Mr. Henry A. Wise Wood, President,  
The American Society of Aeronautic Engineers,  
297 Madison Ave., New York City.

My dear Mr. Wise Wood:

A few days ago, as you have doubtless seen in the papers, desiring to make available the latent inventive genius of our country to improve our Navy, I requested Mr. Thomas A. Edison to become the Chairman of an Advisory Committee of eminent men who would make up the Committee. Mr. Edison, with the patriotism characteristic of American inventors, accepted the call to duty. I am writing to ask the membership of your society to give practical and valuable aid and needed co-operation by selecting representatives of their body to serve as members of the Advisory Committee. It is believed that the best results can be obtained only by such selection of the membership as will be representative of the inventive genius and scientific knowledge found in the membership of your own and kindred societies.

Will you not, as President of the American Society of Aeronautic Engineers, arrange to secure the selection of two of its members to serve on this Advisory Board? I feel that the work your society has done has been such as to give it the right to be, in a way, officially represented, and the Navy Department desires in this way to testify to its own appreciation of the splendid work of our country that your society has done. In addition, I feel that the judgment of your members as to who is best qualified among you to serve on this Board will be far better than my own.

I am going to ask you, by a poll by letter of your members, or in whatever way seems to you most certain of securing the men desired by the majority of your organization, to choose two of your members to serve on this Board, and it will give me great pleasure, when you have furnished me these names to extend the gentlemen the formal invitation of the Department.

We are anxious to begin as soon as possible, and, if your society can furnish me the names at an early date, it will help the prompt organization of the Advisory Board very much. In adopting this course, I have the emphatic approval of Mr. Edison, and he agrees with me that your society should be represented in this way and that no better method of getting the kind of men we need could be devised.

The public press has so fully set forth the general plan that I feel it unnecessary to explain to you the purposes of this Board, but am enclosing a copy of the original letter I wrote to Mr. Edison, and the statement given to the press upon receipt of his message that he would serve.

Thanking you in advance for the great service which we feel your society will be glad to render to our common country, I am

Sincerely yours,

(Signed) JOSEPHUS DANIELS.

Secretary of the Navy.



Lieut. Baron N. von Figyel-messy manoeuvring at the opening of the Pennsylvania aeroplane station, on League Island near Philadelphia.



### Fleet of Aeroplanes Planned for Three States

While naval and military experts are calling for a large fleet of air scouts for national defense, and the Aero Club of America is encouraging the formation of aviation corps for the National Guard and naval militia, a body of patriotic Pennsylvanians has perfected plans for the complete "aerialization" of this State, New Jersey and Delaware.

These patriotic Pennsylvanians are members of the Aero Club of Pennsylvania. For months they have been devising a plan of defense for this part of the country which contains the best points of the aerial tactics of France and Germany.

With the Pennsylvania aeroplane station at the Philadelphia Navy Yard as its centre, a huge aeronautical zone will encircle Pennsylvania, New Jersey, Delaware and the Atlantic Seaboard to the Delaware Capes. This territory ultimately will be policed by aeronauts, who will report every passing aircraft. It furthermore will be covered by a network of wireless stations, by which all information of movements of aircraft may be communicated to the centre.

The Pennsylvania Aeroplane Station will be equipped with a fleet of aeroplanes and hydroaeroplanes which will comprise the first line of aerial defense in time of war, and in time of peace will afford opportunity for instruction and in naval aeronautics for militiamen, navy yard forces and civilians.

The result will be that in time of war these states will be completely prepared to guard themselves against hostile attacks. A machine of the enemy, whether off the coast or in the interior, would be sighted by one of the county patrols, the news at once transmitted to the nearest wireless plant and thence flashed to the aeroplane station at League Island.

Already the Aero Club has undertaken the project, big as it is. County units have been installed in several sections of the State, and wireless stations have volunteered their services.

As for the aeroplane station at League Island, officially opened by the Aero Club on July 3, and the flying squadron to be maintained there, so much success has the project already met that five flying craft have been offered to the club, together with the services of the owners as pilots. Of the five, three are hydroaeroplanes. The other machines are a biplane and a monoplane. Two of the hydroaeroplanes, valued at \$15,000, are given the club by David McCulloch, a well-known sportsman, while the other is the gift of Robert E. Glendinning, an aviator. Other machines will be forthcoming, and in a few months Pennsylvania's aerial fleet is expected to assume large proportions.

### Aeroplane at Plattsburg Camp

The business men's training camp at Plattsburg, New York, to open on August 10th, will have the co-operation of an aeroplane in their activities. A number of patriotic business men, members of the Aero Club of America, have been training at the Gallaudet School at Garden City and are planning to supply both the aeroplane and their services.



Aviator William Kirkbride, of Detroit, in his Wright Biplane.

### Thaw and Young Machines Nearing Completion at Garden City

Activity at the Garden City Aerodrome during the past week has been, with the exception of the flying of Steve MacGordon on the Hemrich and Simplex (Mayo) tractors, chiefly confined to school work and work in the sheds.

The 100 Gnome Gallaudet school machine was having the motor overhauled and will soon be ready for work again, when Millman expects to be able to graduate some of the pupils in a short time.

At the Huntington Aircraft Company's works Kantner is rapidly completing an experimental tractor biplane for Blair Thaw, which will be fitted with the Thaw stabilizer and flown by Thaw, who is about ready to graduate from the Gallaudet school.

Work on the new Huntington tractor biplane, which will be equipped with a 100 h.p. oxx Curtiss motor, is progressing rapidly, so that altogether things are quite lively at the Huntington sheds.

At the Belanca shed Belanca has finished the overhauling of his little 30 h.p. school monoplane so that with the new 50 h.p. machine he now has two machines in good order.

In the big Young hangar the second experimental Young Taube type monoplane is nearing completion and should soon be ready for trials.

A Burgess Dunne machine equipped with an eight-cylinder, 140-H.P. Sturtevant motor with which Mr. Clifford Webster and a passenger recently ascended to a height of 6500 feet, which is the highest an aeroplane has attained at Marblehead. Mr. Webster expressed himself as highly pleased over the performance of the motor.



Sturtevant Motored Burgess Machine.



TABLE OF THE PRINCIPLE SPECIFICATIONS OF AEROPLANE ENGINES\*

By NEIL MacCOULL, M. E.

(Continued from page 475, Aug. 2, 1915)

IN order to give the chief specifications of all important aeroplane engines in a compact form, the accompanying table has been prepared. On account of the war very little information is obtainable from foreign manufacturers directly, and information has to be taken from old catalogues, and English and German Handbooks, as well as from tables which have been published in various aeronautical journals. For this reason the table is in some instances not as up to date as desirable, but is the best that can be obtained at present. In figuring weight per horsepower, the weight of the radiator and water must be considered when comparing water-cooled and air-cooled engines. When the actual weight of radiator and water is not obtainable, it is assumed to be about 90 pounds per 100 h. p. This is a fair average, although there are cases where this weight is less. With units of about 200 h. p. and over, a smaller weight per 100 h. p. is assumed.

The constant *K* corresponds to the assumed constant of 2.5 in the N. A. C. C. horsepower formula, in which variation of piston speed is provided for, thus:

H. P. = (no. of cyls.) × (cyl. diam.)² × (piston speed). / K × 1000

This constant includes both the mechanical efficiency of the

engine and the m.e.p. It is improbable that any engine will show a mechanical efficiency much greater than 80 per cent. Since 75 per cent. is the value now assumed in the N. A. C. C. formula, it would seem that any reduction of *K* will be the result almost entirely of a higher m.e.p. The low values of this constant which are shown in the table must not be considered so much the result of abnormal m.e.p. as a check on the accuracy of the power rating of the engines. The average value is, however, so low as to suggest that a very high effective pressure is obtained in most of these engines. One must use his judgment to determine where the value of *K* is the result of incorrect power rating or of an unusually good engine. The weight and power statistics published by many manufacturers do not seem to very accurate, as there are appreciable discrepancies in the figures obtained from different sources.

One of the greatest services any engineering society could render would be to make and publish official tests and measurements of engines now on the market. At present most manufacturers will not authorize such a public test because they do not want their claims pinned down to truth, while their competitors masquerade under false claims which make the sales. Purchasers as a class are not yet educated up to the point of demanding a real test or of recognizing it when they get it.

	Type	Country of Origin	BORE AND STROKE		Number Cylinders	Cylinder Arrangement	Cooling	Rated H.P.	Rated R.P.M.	Piston Speed at Rated R.P.M.	K	Fuel Consumption, Lb. per H.P.-Hr.	Oil, Lb. per H.P.-Hr.	WEIGHT		VALVES		PRICE
			Inches	Mm.										Engine, Magneto, Carburetor, Etc.	Radiator and Water	Arrangement	Intake	
A. B. C.		Br.	5x4½		8	90° V.	W.	100	1300	975	1.95			375	486	In Head	Mech.	
Aeromarine	K-6	Am.	4½x5½		6	Vertical	W.	100	2000†	1710.	1.9	.63	.063	435	78	Concentric	Mech.	\$2650
Anzani		Fr.	4 13x4 72	105x120	3	Y.	A.	30	1300	1020	1.75	.6	.11	121	121	In Head	Auto.	580
			3 54x4 72	90x120	6	Radial	A.	45	1300	1020	1.7	.6	.11	154	154	In Head	Auto.	870
			4 13x4 72	105x120	6	Radial	A.	60	1300	1020	1.7	.6	.11	176	176	In Head	Auto.	1160
			3 54x4 72	90x120	10	Radial	A.	65	1250	985	1.9	.59	.11	216	216	In Head	Auto.	1250
			3 54x5 12	90x130	10	Radial	A.	80	1250	1070	1.7	.59	.11	225	225	In Head	Auto.	1540
			4 13x5 51	105x140	10	Radial	A.	100	1200	1100	1.9	.59	.11	297	297	In Head	Auto.	1930
			4 52x6 1	115x155	10	Radial	A.	125	1250	1270	2.1	.59	.11	464	464	In Head	Auto.	2410
			4 13x5 51	105x140	20	Radial	A.	200	1250	1150	1.95	.59	.11	682	682	In Head	Auto.	3850
Argus		G	4 8 x5 12	124x130	4	Vertical	W.	70	1250	1065	1.4			287	40	In Head	Mech.	
			5 51x5 51	140x140	4	Vertical	W.	100	1350	1240	1.5			309	46	In Head	Mech.	
			6 1 x6 49	155x165	4	Vertical	W.	150	1250	1353	1.35			420	53	In Head	Mech.	
Arrol		Br.	4 92x6 88	125x175	6	Vertical	W.	130	1300	1490	1.65	.47				Single-Sleeve		
Ashmussen		Am.	3½x4½		12	{ Horiz. Opposed }	A.	105	1800*	1350	2.16			345		Side by Side, Vertical	Mech.	
Austro-Daimler		Au	4 72x5 51	120x140	6	Vertical	W.	90	1310	1200	1.8	.51	.030	375	405	In Head	Mech.	3770
			5 12x6 89	130x175	6	Vertical	W.	120	1200	1378	1.8	.51	.030	490	550	In Head	Mech.	4750
Benz		G.	4 17x5 91	106x150	6	Vertical	W.	85	1350	1330	1.6	.48		365	436	In Head	Mech.	
			4 57x6 3	116x160	6	Vertical	W.	110	1300	1365	1.55			425	525	In Head	Mech.	
			5 12x7 08	130x180	6	Vertical	W.	150	1300	1535	1.6			475	605	In Head	Mech.	
Clerget	Z Y	Fr.	4 72x4 72	120x120	7	Revolving	A.	60	1200	944	2.4	.63	.113	200	200	In Head	Mech.	2500
			5 51x6 3	140x160	8	90° V.	W.	200	1200	1260	1.55			495	660	In Head	Mech.	6170
Curtiss	OX VX	Am.	4x5		8	90° V.	W.	80	1350	1125	1.8			330	402	In Head	Mech.	3200
			5x7		8	90° V.	W.	160	1300	1520	1.9				753	2 Valves in Head	Mech.	4500
De Dion		Fr.	3 94x4 72	100x120	8	90° V.	A.	80	1700	1340	2.1	.50		440	440	L-Head, In. above Ex.	Mech.	2340
Duesenberg		Am.	4½x6		4	Vertical	W.	70	1500	1500	1.65			365	428	Horiz. in Head	Mech.	1250
			6½x7½		12	Vertical	W.	750	1500	1875	1.4			2700	3080	Horiz. in Head	Mech.	6000
E. N. V		Br.	3 74x6 5	95x165	8	90° V.	W.	100	1620†	1755	1.95	.51			488	Horiz. in Head	Mech.	
Fatava		Fr.	4 33x4 72	110x120	4	Vertical	A.	45	1300	1020	1.7			110	110	T-Head	Mech.	1530
			4 33x4 72	110x120	8	90° V.	A.	90	1300	1020	1.7			170	170	2 Cylinders to Each	Mech.	3900
			4 33x4 72	110x120	16	X.	A.	180	1300	1020	1.7			352	352	Set of Valves	Mech.	5800

\*Propeller driven off camshaft

†Geared down propeller.

Data in italics have been assumed from average values.

Data in heavy type obtained from official tests.

"Radial" means cylinders stationary, and equally spaced around crank-case.

"Revolving" means cylinders equally spaced around crank-case, and revolving about crank-shaft.

Valves "In Head" means operated by rockers and push-rods.

\*From a paper presented before the Society of Automobile Engineers, June, 1915.

# AEROPLANE ENGINES—TABLE OF PRINCIPLE SPECIFICATIONS—*Concluded*

	Type	Country of Origin	BORE AND STROKE		Number Cylinders	Cylinder Arrangement	Cooling	Rated H.P.	Rated R.P.M.	Piston Speed at Rated R.P.M.	K	Fuel Consumption, Lb. per H.P.-Hr.	Oil, Lb. per H.P.-Hr.	WEIGHT			VALVES		PRICE
			Inches	Mm.										Engine, Magneto, Carburetor, Etc.	Radiator and Water	Total	Arrangement	Intake	
Gnome	Ω	Fr.	4.33x4.72	110x120	7	Revolving	A.	50	1200	944	2.5	.59	.185	172	..	172	Exhaust in Head Intake in Piston	Auto. Auto. Auto. Auto.	\$2530 3400 4230 6800 8470
	Δ	...	4.88x5.52	124x140	7	Revolving	A.	80	1200	1102	2.3	.59	.185	207	..	207			
	ΔΔ	...	4.88x5.91	124x150	9	Revolving	A.	100	1200	1180	2.5	.59	.185	297	..	297			
	ΔΔΔ	...	4.88x5.52	124x140	14	Revolving	A.	160	1200	1102	2.3	...	.185	396	..	396			
Green	...	Br.	5.52x5.75	140x146	4	Vertical	W.	62	1155	1105	2.16	.59	.11	302	41	375	In Head Overhead Camshaft	Mech. Mech.	1940 3650
	...	...	5.52x5.98	140x152	6	Vertical	W.	120	1250	1245	1.9	.48	...	440	..	548			
Gyro	...	Am.	4.3 x4 75	...	7	Revolving	A.	50	1150	910	2.35	.72	.17	160	..	160	In Intake in Piston	Semi-Auto	...
Gyro-Duplex	K	Am.	4½x6	...	7	Revolving	A.	85	1250	1250	2.1	...	...	215	..	215	Ex. in Head Piston-Valve Intake	Mech. Mech.	2750 3500
	L	...	4½x6	...	9	Revolving	A.	102	1250	1250	2.23	.79	.160	270	..	270			
Hall Scott	A-2	Am.	4x4	...	8	90° V.	W.	60	1400	933	2.0	...	...	260	..	314	In Head In Head In Head Overhead Camshaft	Mech. Mech. Mech. Mech.	2000 2750 3200 4200
	A-3	...	4x5	...	8	90° V.	W.	80	1400	1166	1.85	...	...	290	..	362			
	A-4	...	5x5	...	8	90° V.	W.	100	1200	1000	2.0	...	...	535	..	685			
	A-5	...	5x7	...	6	Vertical	W.	125	1250	1460	1.75	...	...	515	..	685			
Harriman	...	Am.	5x5	...	4	Vertical	W.	60	1150	960	1.6	.68	.037	240	..	294	In Head Overhead Camshaft	Mech. Mech.	1250 2600
	...	...	5x5	...	6	Vertical	W.	100	1400	1165	1.7	.74	.035	355	..	445			
Isaacson	...	Br.	4.33x5.12	110x130	7	Radial	A.	65	1100	940	1.90	...	...	196	..	196	Exhaust in Head Intake in Piston	Mech. Mech.	...
	...	...	4.72x5.91	120x150	9	Revolving	A.	100	1200	1180	2.35	...	...	250	..	250			
	...	...	4.72x5.91	120x150	18	Revolving	A.	200	1200	1180	2.35	...	...	465	..	465			
Johnson (Two-Cycle)	...	Am.	5x4	...	6	90° V.	W.	75	1300	866	1.75	...	...	298	..	379	Two Cycle Two Cycle Two Cycle	.....	1800 2400 3600
	...	...	5x4	...	8	90° V.	W.	100	1300	866	1.75	...	...	418	..	508			
	...	...	5x4	...	12	90° V.	W.	150	1300	866	1.75	...	...	598	..	728			
Kemp	J-8	Am.	4½x4½	...	8	90° V.	A.	80	1150	910	1.65	...	...	380	..	380	In Head	Mech.	1250
Koerting	...	G.	4.57x4.97	116x126	8	90° V.	W.	75	1250	1035	2.3	...	...	440	..	507	L-Head, In. over Ex.	Mech.	...
Laviator	...	Fr.	3.94x5.12	100x130	8	90° V.	W.	80	1200	1022	1.6	...	...	275	..	347	Concentric Concentric Concentric Concentric In Head	Mech. Mech. Mech. Mech. Mech.	2530 4100 3700 6220 7000
	...	...	5.12x6.3	130x160	6	Vertical	W.	110	1100	1155	1.65	...	...	616	..	716			
	...	...	4.48x6.3	114x160	8	90° V.	W.	120	1200	1260	1.7	...	...	418	..	588			
	...	...	5.72x6.88	145x175	8	90° V.	W.	200	1100	1260	1.65	...	...	715	..	885			
	...	...	7.08x7.87	180x200	6	Vertical	W.	250	1050	1375	1.65	...	...	1210	..	1480			
Manly	...	Am.	5x5½	...	5	Radial	W.	52.4	950	860	2.1	...	...	151	37	188	L-Head, In. above Ex.	Auto.	...
Maximotor	A8V	Am.	4½x5	...	8	90° V.	W.	110	1350	1125	1.65	...	...	420	80	500	In Head	Mech.	2250
Maybach	...	G.	6.3 x6.69	160x170	6	Vertical	W.	180	1200	1334	1.75	.51	.025	990	..	1160	T-Head	Mech.	...
Mercedes	E4F	G.	4.72x5.52	120x140	4	Vertical	W.	70	1400	1285	1.65	.53	.033	278	..	341	In Head Overhead Camshaft In Head 2 Ex., 1 Int. In Head 2 Ex., 1 Int.	Mech. Mech. Mech. Mech.	\$1790 2740 2970 5830
	E6F	...	4.72x5.52	120x140	6	Vertical	W.	100	1350	1240	1.65	.53	.033	430	..	580			
	J4L	...	6.3 x6.69	160x170	4	Vertical	W.	120	1100	1230	1.65	.53	.033	660	..	768			
	J8L	...	6.3 x6.69	160x170	8	Vertical	W.	240	1100	1230	1.65	.53	.033	1250	..	1460			
N. A. G.	F-2	G.	4.64x3.94	118x100	4	Vertical	W.	55	1600	1050	1.65	...	...	211	..	261	In Head In Head In Head	Mech. Mech. Mech.	...
	F-3	...	5.32x6.3	135x160	4	Vertical	W.	100	1250	1310	1.5	...	...	405	..	495			
	F-4	...	5.32x6.3	135x160	6	Vertical	W.	150	1350	1420	1.6	...	...	550	..	680			
Rapp	...	G.	5.51x6.3	140x160	6	Vertical	W.	150	1300	1365	1.65	...	...	570	..	700	Overhead Camshaft	Mech.	...
Rausenberger	...	Am.	4½x6	...	12	60° V.	W.	150	1200	1200	1.65	...	...	590	..	720	In Head	Mech.	...
Renault	...	Fr.	2.75x4.72	70x120	8	90° V.	A.	40	1800	1420	2.15	...	...	242	..	242	L-Head Intake Above Exhaust	Mech. Mech. Mech. Mech.	1650 2040 2330 3300
	...	...	3.54x4.72	90x120	8	90° V.	A.	50	1800	1420	2.8	...	...	375	..	375			
	...	...	3.78x5.52	96x140	8	90° V.	A.	70	1800*	1660	2.7	.64	.045	397	..	397			
	...	...	3.78x5.52	96x140	12	60° V.	A.	100	1800*	1660	2.8	...	...	639	..	639			
Rhone	...	Fr.	4.13x5.52	105x140	9	Revolving	A.	80	1200	1100	2.1	.57	.094	253	..	253	In Head	Mech.	3080
Roberts (Two-Cycle)	6X	Am.	5x5	...	6	Vertical	W.	100	1400	1165	1.7	.63	.047	350	..	440	Two-Cycle Two-Cycle	.....	1250 1850
	6XX	...	6½x6	...	6	Vertical	W.	200	1400	1400	1.8	.63	.047	690	..	860			
Salmson (Canton-Unne)	M-7	Fr.	4.72x5.52	120x140	7	Radial	W.	90	1250	1150	2.0	...	...	286	..	334	In Head In Head In Head In Head	Mech. Mech. Mech. Mech.	2900 3450 ..... 9250
	M-9	...	4.72x5.52	120x140	9	Radial	W.	110	1280	1175	2.1	.61	.059	352	60	412			
	D-9	...	4.72x5.52	120x140	14	Radial	W.	200	1250	1150	1.8	...	...	660	..	820			
	D-9	...	5.91x8.27	150x210	9	Radial (Horiz.)	W.	300	1200	1652	1.7	...	...	990	..	1190			
Sturtevant	D-4	Am.	4½x4½	...	4	Vertical	W.	50	1400	1050	1.7	.57	.058	220	50	270	L-Head L-Head T-Head, 4 Valves L-Head	Mech. Mech. Mech. Mech.	.....
	D-6	...	4½x4½	...	6	Vertical	W.	80	1400	1050	1.6	.57	.057	320	80	400			
	E-4	...	4½x6	...	4	Vertical	W.	100	2000†	1050	1.6	.52	.050	400	90	490			
	8	...	4x5½	...	8	Vertical	W.	140	2000†	1830	1.7	.51	.032	550	110	680			
Sunbeam-Coatalen	...	Br.	3.54x5.91	90x150	8	90° V.	W.	150	2000*	1970	1.3	.49	.032	600	..	730	L-Head L-Head	Mech. Mech.	.....
	...	...	3.54x5.91	90x150	12	60° V.	W.	225	2000*	1970	1.3	.49	.032	905	..	1085			
Wolsley	...	Br.	4x5½	...	8	90° V.	A-W	90	1800*	1650	2.35	.60	...	385	..	...	In Head In Head In Head	Mech. Mech. Mech.	.....
	...	...	3½x5½	...	8	90° V.	W.	90	1800*	1650	2.05	.55	...	405	..	486			
	...	...	5x7	...	8	90° V.	W.	130	1200	1400	2.15	.54	...	720	..	837			
Wright	6-60	Am.	4½x4½	...	6	Vertical	W.	60	1400	1050	2.0	.67	...	305	..	359	In Head	Mech.	1875

\* Propeller driven off camshaft.

† Geared down propeller.

Data in italics have been assumed from average values.

Data in heavy type obtained from official tests.

"Radial" means cylinders stationary and equally spaced around crank-case.

"Revolving" means cylinders equally spaced around crank-case and revolving about crank-shaft.

Valves "In Head" means operated by rockers and push-rods.





The first class of graduates to leave the Curtiss Aviation School at Toronto for the front. From left to right: Lieut. D. A. Hay, Lieut. C. McLaurin, Lieut. A. S. Ince, Lieut. G. A. Gooderham, Lieut. F. Homer Smith, Capt. E. H. MacLachlan, Lieut. C. Van Nostrand, Lieut. C. N. Geale, Lieut. D. G. Joy, Lieut. W. H. Peberdy, Pilot V. Carlstrom, Mechanic J. Honor.

## THE TORONTO CURTISS AVIATION SCHOOL

Early in May the Curtiss Aeroplanes and Motors Co., Ltd., the Canadian branch of the Curtiss Aeroplane Co., opened an aviation school at the Island Sandbar, Toronto. The enrollment at the commencement was eleven students, and inside a fortnight this number had been increased to thirty, with a waiting list of seven hundred. Most of the students at the school are taking the course with a view to service in Europe, and the photograph above shows the first class of graduates to leave for the front.

On account of the local wind currents, which reach their highest velocity during the middle of the day, most of the flying at the school has to be done in the very early hours of the morning and the late hours of the afternoon. On account of this fact the students live in tents on the island close to the hangars.

Mr. Peberdy, shown in the picture above, assisted by Mr. J. A. D. McCurdy in the organization of the school and during his stay at the Island actively assisted in instruction. Mr. Peberdy is an engineer and has become an expert with the Curtiss motor.

As aviators in flight need only the most elementary knowledge of their engines, since if a stoppage occurs in the air there is nothing to be done but to come to earth, none of the learners are being required to make a special study of the engine with which the flying boat is equipped.

Since the school opened a large number of the leading American pilots have gravitated to Toronto, including Tony Jannus, T. C. Macaulay, S. S. Pierce, Victor Vernon, John Guy Gilpatric and Victor Vernon, John Guy Gilpatric and Victor Carlstrom.

John Guy Gilpatric, although one of the youngest aviators in the country, has a record for being one of the most skilful and consistent of America's fliers. He learned on a Deperdussin monoplane at the Sloane

School, and upon graduating was appointed assistant instructor of the school, later to become chief instructor. In spite of his youth he at once showed he was a most capable instructor and his brilliant record in this line is attested to by the number of pupils he turned out without a single serious accident. He has flown for four years without an accident.

Samuel S. Pierce has had extensive aeronautical experience. He built one of the first monoplanes in America at Colorado Springs in 1909 and went to Europe and won his license at the Bleriot School at Pau, France, in 1911.

He was in charge of the aeroplanes and flying corps of the Serbian army in the Balkan war in 1912-1913, was in charge of the aviation school at Cairo in 1914, organized Le Gran's flight and prepared his machine at Paris. His broad experience is now standing him in excellent stead at Toronto.

Tony Jannus has the name of being one of America's most skilful and daring pilots, one who never disappoints even when confronted with the greatest obstacles. He taught himself to fly on the Rex-Smith biplane at Washington and afterwards went to St. Louis and flew the early Benoist biplane under trying conditions. He soon became chief instructor of the Benoist School, graduating many pupils. He made a world's record for a hydro-aeroplane in 1912, flying 1900 miles along the Mississippi River. He later took to the flying boat and has made exhibition flights in many parts of the country.

Theodore S. Macaulay has been associated with The Curtiss Co. for several years in the capacity of instructor and demonstrator. A graduate of the Curtiss school, he soon showed his aptitude for flying and was engaged by the Curtiss Aeroplane Co. as an assistant instructor. He later was appointed chief land instructor at San Diego.

On the page opposite we present a most interesting set of tables.

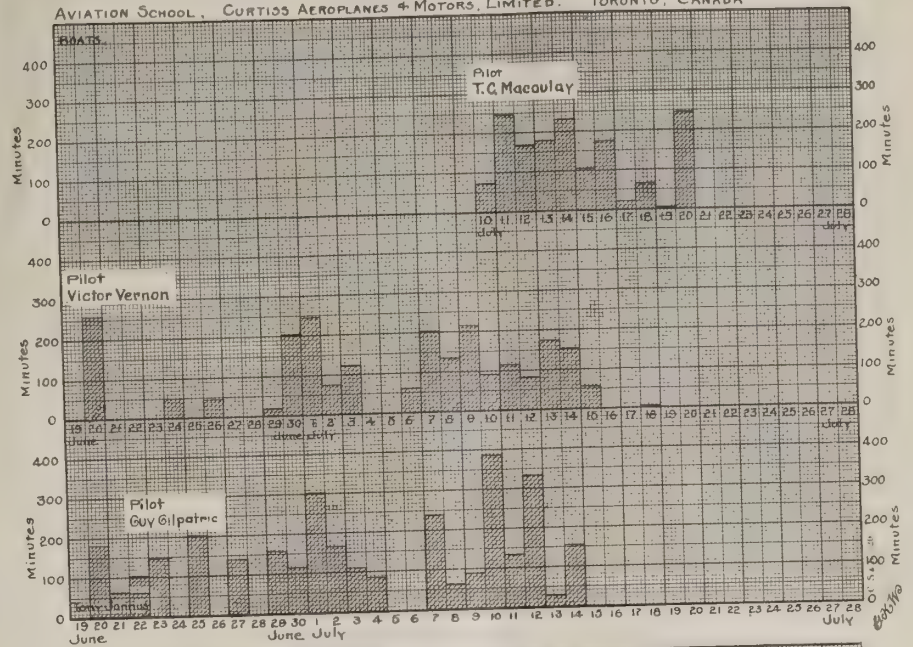


Students of the Toronto School being tutored.

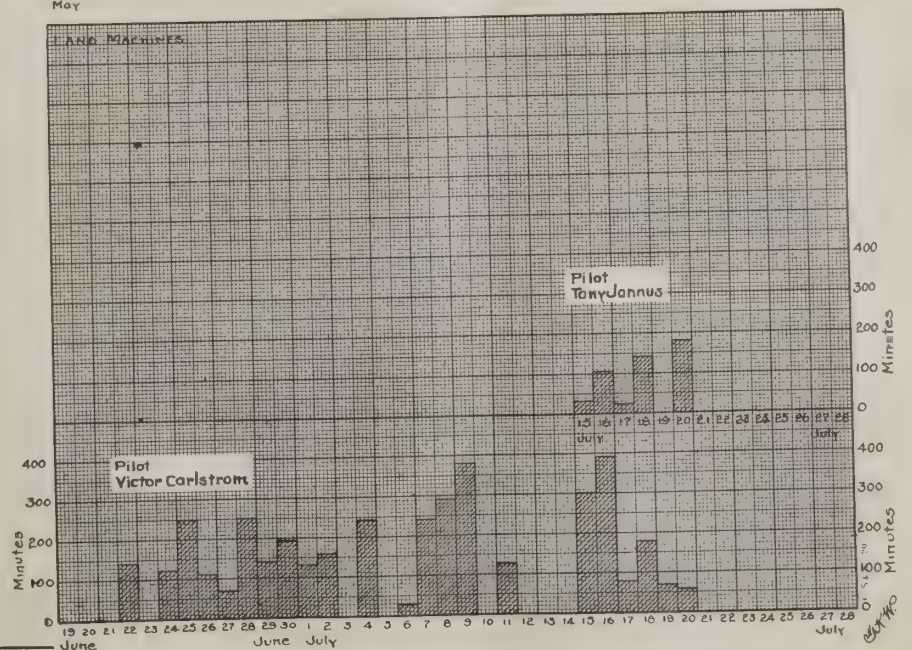
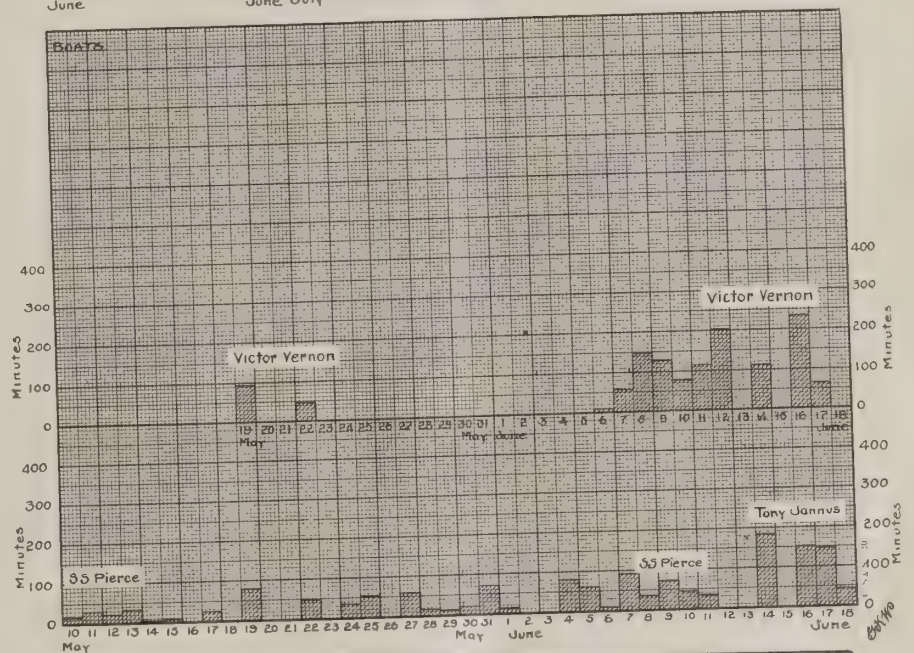


## DAILY FLYING RECORD.

AVIATION SCHOOL, CURTISS AEROPLANES &amp; MOTORS, LIMITED. TORONTO, CANADA



The tables herewith reproduced illustrate the efficient method adopted by the Curtiss Company for recording the number of minutes which each pilot at the school spends in the air each day.





## THE LATEST HEINRICH MILITARY TRACTOR, E2



Side view of the latest 110 h. p. Gyro motored Heinrich tractor.

This machine designed for military use, has a speed of 80 m.p.h. It has seating capacity for pilot and two passengers and carries 4½ hours' fuel. The weight empty is 1,165 lbs., and the useful load is 850 lbs. The area of the main planes is 350 sq. ft., the span is 39 ft., and the over all length is 24 ft. 8 in. The power plant is a 110 h.p. Gyro, which drives an 8 ft. 6 in. propeller of 6½ ft. pitch. An especially fine view is afforded by leaving off the covering of the lower plane between the body and the first rib. This machine has made a number of two-hour flights, and has to its credit the American altitude record, 6,496 ft., for pilot and two passengers.

### Wings

The main planes have an area of 350 sq. ft. They have a back sweep of 10 degrees and the top is staggered 15 in. forward of the lower plane. The top plane has an overhang of 6 ft. beyond the last strut, and the bottom has 3 ft. The span of the top wing is 39 ft. and of the lower is 33 ft. The chord is 5 ft. and the gap is 5 ft. 6 in. The angle of incidence is 3 degrees and the camber is 1½ in. The struts are of streamline form and are held in place by a quick release type of fitting. The spars are of I-beam section and are channeled from solid spruce. The ribs are built up of ¾x¾ in. whitewood straps and a 5/32 in. mahogany veneer web. Tests were made of these ribs recently and they stood a concentrated load of 180 lbs. before breaking. This is equivalent to a distributed load, between the spars, of 360 lbs., and gives a factor of safety of 21.

### Fuselage

The fuselage is 20 ft. 10 in. long, and 40 in. wide at the nose. The greatest depth is 40 in. at a point between the two cockpits. It is approximately square in section, with a turtle back top, and tapers to a vertical knife edge at the tail. The top half of the engine is covered by a dome-shaped aluminum hood. The tanks are also placed under this hood. The pilot and passenger compartments are finished in polished mahogany and are quite roomy. They are fitted with clock, air speed indicator, revolution indicator, and barograph. A step is cut into the side to help in climbing on board.

### Empennage

The stabilizer has an area of 24 sq. ft. and is set at a lifting angle of 1½ degrees. There are two elevators of 8 sq. ft. each. The area of the rudder is 11½ sq. ft.

### Chassis

The chassis is very simple, consisting of two wheels and two skids, with rubber shock absorbers.

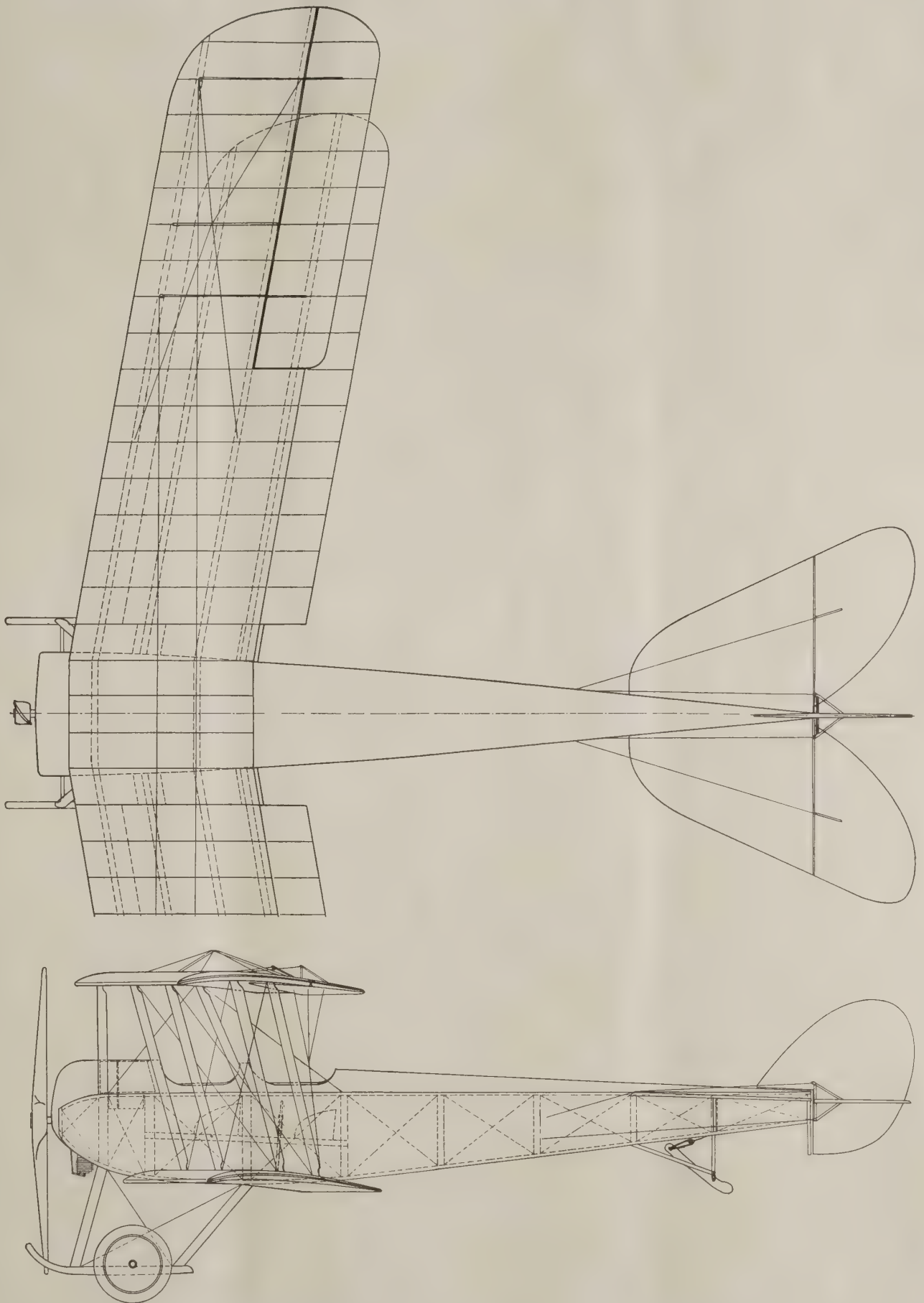
### Specifications

Number of seats, three; span, top, 39 feet; span, lower, 33 feet; chord, 5 feet gap, 5 feet 6 inches; area, 350 square feet; length over all, 24 feet 4 inches; type of body, rectangular, turtle back; landing gear, two wheel and two skid; lateral control, ailerons; motor, Gyro; horsepower, 110; fuel capacity, 4½ hours; useful load, 850 pounds; weight, empty, 1150 pounds.



Aviators Guy Gilpatric and George Page about to start a flight in the new Heinrich military tractor, using a special 'phone arrangement which enables them to carry on a conversation with the motor running wide open.

Scale Drawings of the Latest Model E-2 Heinrich Military Tractor Biplane







# FOREIGN NEWS

Edited by L. d'Orcy



## France.

On July 27 French aviators have thrown shells and steel arrows on the military railroad station at Nantillois, to the north of Montfaucon.

How a German submarine heading for a British transport laden with troops and ammunition, was put to flight by an Allied aeroplane is described by the Seddul-Bahr correspondent of the *Matin*.

An aviator saw the underwater boat preparing to launch a torpedo and gave the alarm. Pending the arrival of destroyers, he dropped bombs at the submarine. Although none of the missiles took effect, they forced the submarine to plunge deeper. Soon afterward the periscope reappeared on the surface, and the aviator dropped two more bombs. The submarine then made off and did not reappear.

French bombing aeroplanes have scored a new success at the Dardanelles by shelling the new aviation camp the Turks established to the north of Chanak, after their first camp had been destroyed by French and British airmen. The bombs thrown during this new raid hit the hangars and a gasoline supply station, and set them on fire.

## Great Britain.

Information has been received in London that an aerial torpedo with tremendous explosive power, which can be directed by Hertzian waves has been perfected by the German Government and that these new missiles of destruction soon will be launched from Zeppelins.

In previous raids by Zeppelins gravity bombs have been used. The destruction done by these bombs proved insufficient and German scientists then began working on an aerial torpedo.

Word has just come to the British authorities that the Germans, at their experimental stations, have succeeded in guiding aerial torpedoes by means of Hertzian waves. The torpedo is about seven feet in length. It is kept at any desired height by means of two underbody screws turned by a common shaft. There are also two stern screws, and these and the underbody propellers are controlled by the Hertzian waves.

Each aerial torpedo is filled with high explosives, picric acid forming the base. It is estimated that one of them would be capable of destroying the entire group of Parliament buildings.

A British naval airship was destroyed by an explosion on July 28, in its shed at Wormwood Scrubs. The explosion is believed to have been caused by an accidental ignition of the hydrogen leaking through the airship's envelope. Both the airship and the shed were wrecked. The casualties amount to two killed and fifteen injured.

Two companies of territorials recently brought down an aeroplane at Southend, only to find that their victim was a British army machine.

While guarding huge quantities of war munitions at Canpey Island the territorials had instructions to shoot at any aviator who did not give an agreed signal. The aviator either did not know of this rule or ignored it. A bullet punctured the aeroplane's gasoline tank.

A highly successful machine, which has been given its trials at Hendon, is the 125 h.p. Anzani motored Mann biplane, which is driven by two pusher air screws placed at both sides of the fuselage and actuated by a chain transmission. The engine is situated in the nose of the fuselage and the gunner's seat is right behind it, affording a wide arc of fire which should prove useful for attacking hostile aircraft.

By an order approved by the King in Council on July 6th, on the application of the Lord Commissioners of the Admiralty, the rating of boy mechanics has been established in the Royal Naval Air Service, with pay at the rate of one shilling (25 cents) a day.

Five aeroplanes of the latest B E 2c type, built by the Bristol Co. and subscribed for by the Overseas Club, were presented on July 3rd by Queen Alexandra in behalf of the Overseas Dominions to the Royal Flying Corps.

The machines are intended for use in France.

## Italy.

The Italian War Office announces the following:

On July 21 an Italian dirigible dropped bombs on the San Polai and Nabresina Railroad. All exploded with excellent results. This aerial incursion was repeated on July 23, on the Nabresina Railroad with good results. Each time the dirigibles returned undamaged, despite a violent cannonade.

Charles Pryor, of Orangeburg, Rockland County, an aviator with the Italian army, was recently wounded by the Austrians.

A letter from Milan, Italy, written to Pryor's brother, by a hospital nurse, stated that Pryor had a bullet wound in the arm and another in the shoulder.

Pryor went to Italy seven months ago to demonstrate an American flying boat, and when the war began got a sergeant's commission in the Italian aviation corps. His machine was struck in mid-air, but he drove it behind the Italian lines before descending.

On the afternoon of July 23 two Italian seaplanes flew over Riva and dropped eighteen bombs on the railroad station, with excellent results. The enemy's artillery fired on the machines without causing any damage.

John Lansing Callan, an American aviator, who has been an instructor to the Italian naval flying corps, has returned to this country for a short vacation.

He said the Italian navy was building huge flying boats capable of carrying a ton and remaining in the air for ten hours. These machines will be equipped with engines of 350-horsepower and be armored against attack.

## Mexico.

Captain William A. Mattery, an American aviator, was killed by a fall of 5,000 feet while on duty with Villa's army in Mexico, according to a telegram received by Ray Harroun, the automobile racer.

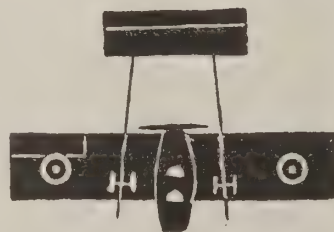
Mattery's home was in Chicago.

## Russia.

Reuter's correspondent at Petrograd sends the following dispatch:

"A German aeroplane appeared over a Russian aerodrome on the Dniester on July 11, and immediately was engaged by a Russian aeroplane, which used its machine gun effectively. The enemy replied and his shots pierced the Russian machine five times. The duel terminated in the killing of the German airman and the wounding of his observer by the machine gun fire. The machine turned turtle and fell, aflame, into the Russian lines. The observer was burned to death in the flames."

Fly-leaf showing the silhouettes of the four types of French military aeroplanes used in the field, the Farman fighting scout, the Morane-Saulnier light scout, the Caudron gun-spotter and the Voisin bombardier; it was issued by the French Army authorities for the purpose of instructing the troops of the Republic to recognize friendly aeroplanes.



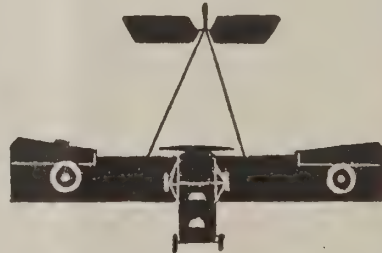
Farman.



Morane.



Caudron.



Voisin.

Scale working drawings of the Dean single-propeller gear-driven model.





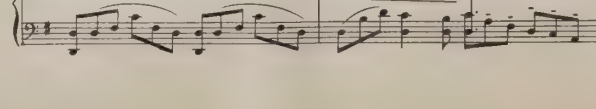
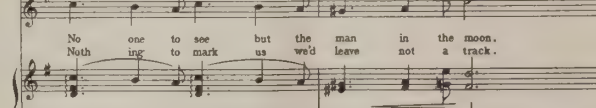
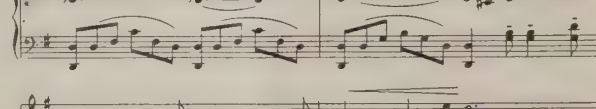
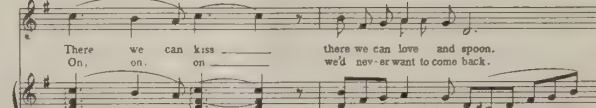
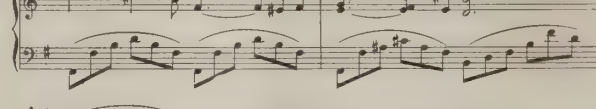
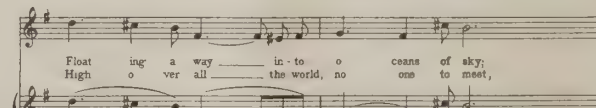
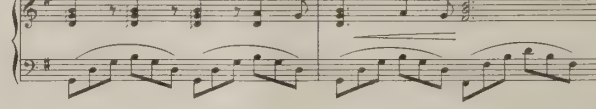
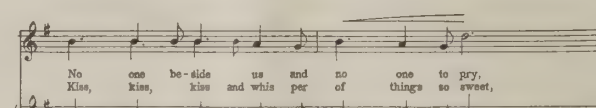
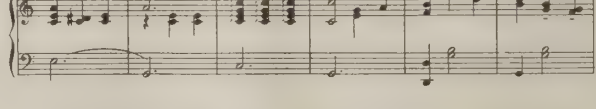
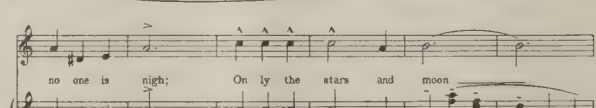
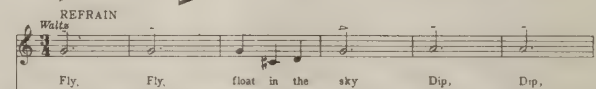
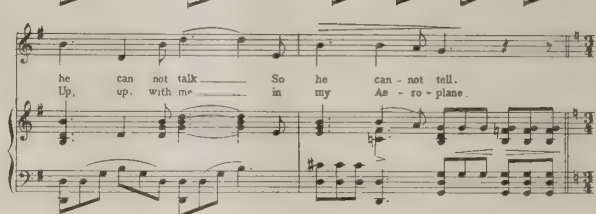
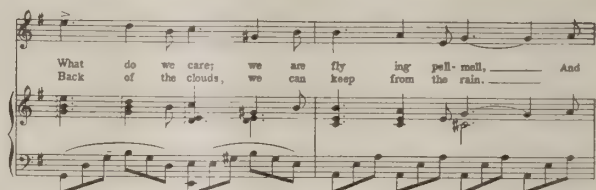
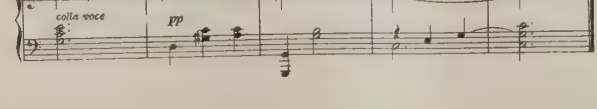
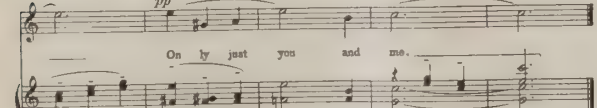
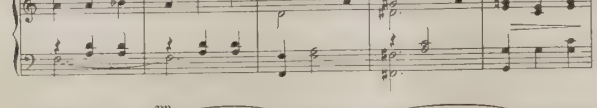
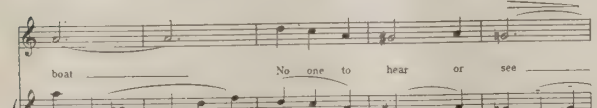
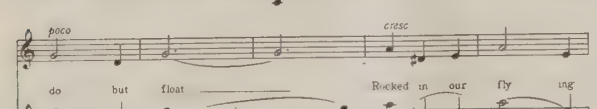
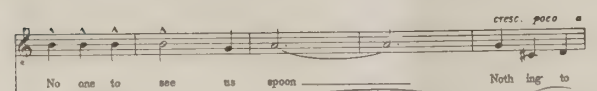
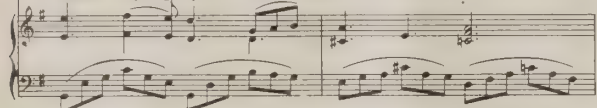
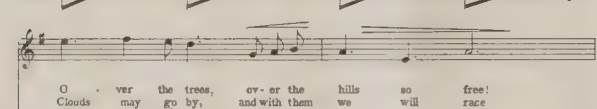
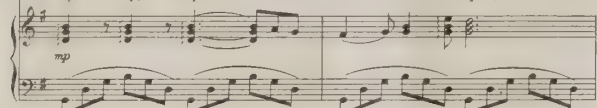
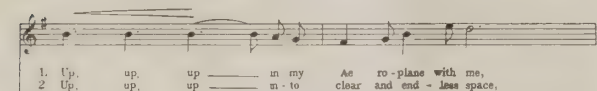
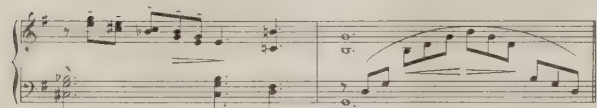
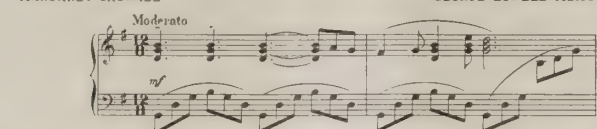
Aeronitis is a pleasant, a decidedly infectious ailment, which makes its victims "flighty," mentally and physically. At times it has a pathologic, at times merely a psychologic foundation. It already has affected thousands; it will get the rest of the world in time. Its symptoms vary in each case and each victim has a different story to tell. When you finish this column YOU may be infected, and may have a story all of your own. If so, your contribution will be welcomed by your fellow AERONUTS. Initials of contributor will be printed when requested.

## LOVE IN AN AEROPLANE

Words by  
MARGARET CASWALL

Music by  
GEORGE LOWELL TRACY

Moderato





(Continued from page 505)

**Aero Science Club**

By G. A. CAVANAGH

The elimination contest of the Aero Science Club for the four flyers to represent the club in the Aero Club of America contests was held Sunday, August 1st. In spite of the extreme heat many members were on the field and many good flights were made. The results of the contest will be taken up at the coming meeting and the four flyers picked.

Word was received from the Long Island Branch that three of their members were working on a compressed air motored model and would possibly take part in the event on August 22nd, for compressed air motored models. The three members are Messrs. L. Ness, D. Criscouli and H. Criscouli. These efforts are along the lines of an upright motor which they hope to have completed in short time. The Criscouli brothers, who have a reputation of building models of very good workmanship and design, will build the machine for the motor. Should these members of the Long Island Branch get their machine ready in time for the August 22nd event, a contest will be held for this type model, which will be the first of its kind to be held in America.

Although the weather was extremely warm, a large number of members were present at the past meeting. All persons desiring information concerning the coming contests should address the secretary, 29 West 39th St., New York City.

**Milwaukee Model Aero Club**

On Sunday, July 25, the Milwaukee Model Aero Club held the first of a series of three meets for R. O. G. distance and duration. The winner of this series is to be awarded a silver loving cup.

The three best contestants were:

	Duration	Distance	Points
Lynn Davies .....	55 sec.	810 feet	2,000
Gilbert Counsell .....	52 sec.	791 feet	1,922
Erwin Eiring .....	47 sec.	771 feet	1,807

Eiring probably would have been first in duration had he not been so unfortunate as to lose his best machine the day before the meet.

The State Fair board of Wisconsin has offered seven loving cups, the same number of medals and twenty-five dollars in cash as prizes for model aeroplane competitions to be held at this year's fair.

(Continued from page 497)

**Military Aviation News**

During the past week the First Aero Squadron has packed its equipment, and on Saturday, July 24, its equipment was shipped from San Diego to Fort Sill, Oklahoma. The Squadron itself left San Diego July 26 on the 3:10 p.m. train en route for Fort Sill. This organization formed at its barracks in San Diego and marched to the train amid volumes of applause from the citizens of the city.

The amount of equipment necessary to transport an aero squadron is easily seen from the following: On this trip the First Aero Squadron required one standard sleeper, two tourist sleepers, one coach, two baggage cars for its personnel; for the material, ten cars used, as follows: one car for mounts, one automobile car for automobiles, four automobile cars for eight motor trucks, four automobile cars for eight aeroplanes, motors, spare parts for aeroplanes and for motors, spare motors, tool chests, motorcycles, aeronautical instruments, etc. The First Aero Squadron is due to receive further equipment in order to bring it up to the authorized standards.

The First Aero Squadron displayed its efficiency by its method of handling this large amount of equipment. The equipment was transferred from North Island to San Diego by barge. It arrived at the San Diego dock at 7:30 a.m. Thursday. By 11:00 a.m., three and a half hours later, this large amount of equipment was placed aboard the cars. On Friday the motor trucks, motorcycles, quartermaster and ordnance property were loaded. On Saturday the horses and certain miscellaneous odds and ends were loaded, and the entire train departed for Fort Sill.

Captain Wm. Lay Patterson, Signal Corps, who has been absent since March 14, 1915, on sick leave, most of which he spent in Washington, D. C., and vicinity, returned to duty July 25.

**Nebraska National Guard Aviation Corps Organized**

By authorization of the Governor, the first aviation corps attached to the National Guard of Nebraska has been organized and activities commenced. The local enthusiasm is very keen, and the new organization is expected to make very rapid progress.

**National <sup>AERO</sup>Varnish, \$3.75 PER GAL.**  
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**CONSULTING**  
**AERONAUTICAL ENGINEERS**

Engine design and testing by a mechanical engineer.

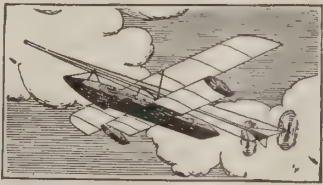
General aeroplane designing and drafting.

Small metal stampings and forgings.

**Box R, Aerial Age**

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**MODELS**  
AND  
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**The Model Supply House, Walter H. Phipps,**  
Dept. G, 503 5th Ave., New York

**110 Aircraft on Arabic**

The White Star liner Arabic sailed for Liverpool on July 28th with 16,000 tons of cargo for the British War Department. It included 125 motor trucks and 110 aeroplanes packed in cases 40 feet long, 10 feet wide, and 5 feet deep, which were all lashed down on the ship's decks fore and aft.

The superstructure of the Arabic was painted navy gray and sandbags were piled three feet high around the wheelhouse in the stern in case of the ship being shelled by a submarine. The most conspicuous objects on the liner when she steamed away were the big white packing cases containing the aeroplanes on her decks.





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## THE TURNER AVIAPHONE

Used by the Russian Government

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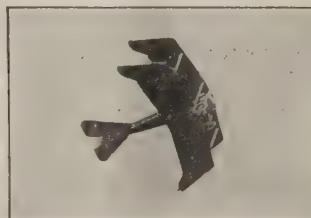
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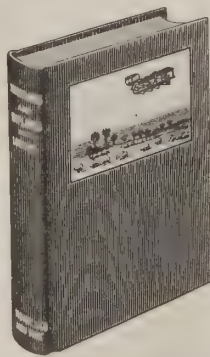


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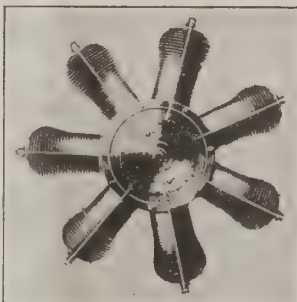
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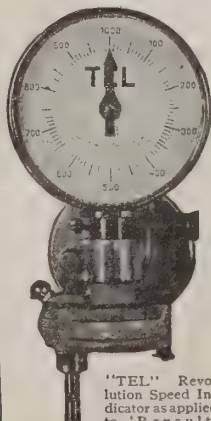
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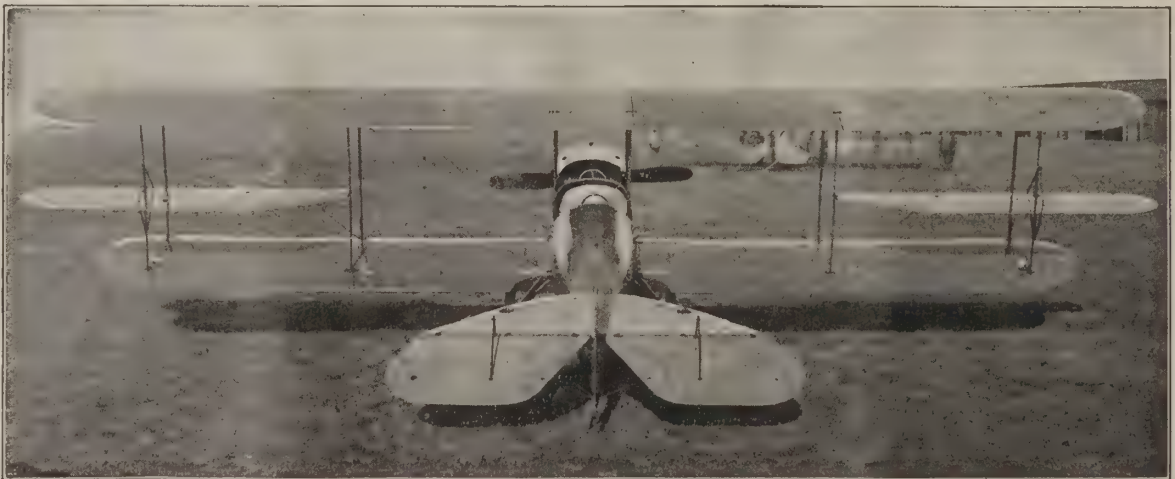
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## WEEKLY

VOL. I. NO. 22

AUGUST 16, 1915

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to Increase Aeroplane  
Fund to \$500,000**

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**Reasons for Worrying Over Status  
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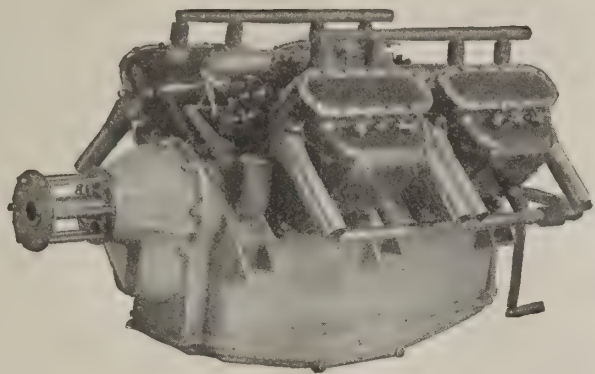
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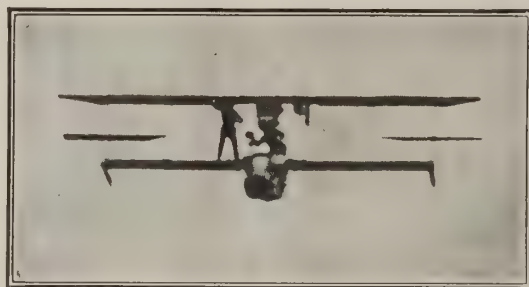
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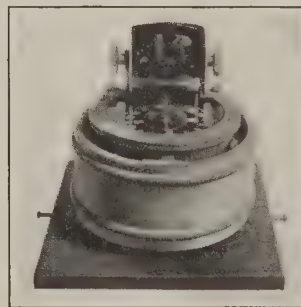
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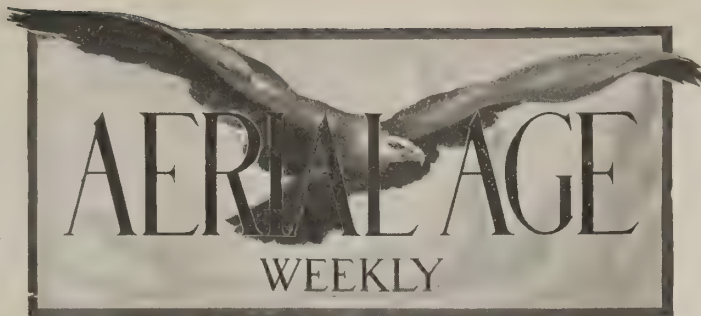
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PUBLISHED WEEKLY BY THE AERIAL AGE COMPANY, Inc., 116 West 32nd Street, New York City  
*Entered as Second-Class Matter, March 25, 1915, at the Post Office at New York, N. Y., under the Act of March 3, 1879*

VOL. I.

NEW YORK, August 16, 1915

No. 22

### Mr. Emerson McMillin Offers \$50,000 to In- crease Aeroplane Fund to \$500,000

MR. EMERSON McMILLIN, the prominent Wall street banker, who recently contributed \$1,000 to the National Aeroplane Fund, has offered \$50,000 to increase the fund to \$500,000 in the next six months.

In a letter to Mr. Alan R. Hawley, the President of the Aero Club of America, Mr. McMillin emphasizes the necessity of training aviators and inducing them to use the most efficient aeroplanes and motors available, having the motors equipped with mufflers and self-starters. These devices are available, but aviators do not use them, principally because the additional weight of the mufflers and self-starters decrease the speed of the aeroplane by between two and three per cent, and Mr. McMillin points out that the question of silent or noisy movement in warfare is a question of success or failure, therefore, he urges that this matter be given thorough consideration in the immediate future. Mr. McMillin continues:

"Whatever the cost of developing this combination of trained aviators and good aeroplanes and motors, it should be done. Russia and the Russians doubtless felt loath to incur such expense a couple of years ago—and refrained from expenditures—and at what awful cost. Feeling the grave importance of this branch of military equipment, I will gladly contribute in any possible way to expedite the work of creating an efficient corps of aviators with aeroplanes in sufficient numbers for their use."

To expedite the work Mr. McMillin offers to add another \$100 to each and every \$900 paid into the fund between August 1st, 1915, and February 1st, 1916, until the sum of \$500,000 is reached, which will make his contribution \$50,000 besides the \$1,000 already contributed.

The cash subscriptions received so far by the Aero Club of America for the National Aeroplane Fund aggregate \$12,000. A Curtiss flying boat, worth \$7,500, has been presented to the naval militia of New York State, and the use of a dozen aeroplanes and services of aviators have been offered to the militia of different states.

Women of wealth are displaying marked interest in the Aero Club's movement to develop aviation corps for the national guard and naval militia. Mrs. Willard Straight, wife of a member of the firm of J. P. Morgan & Co., is one of the latest subscribers of \$250 to the fund.

A prominent New York woman, who desires to remain anonymous, has contributed \$1,000. Other women subscribers are:

Mrs. Perle Ward Root.....	\$100
Miss Helen Ware.....	100
Mrs. Emma F. Slauson.....	50
Mrs. A. Murray Young.....	25
Miss Katherine Huntington.....	25
Miss Clementine Furniss.....	25
Mrs. C. W. Cooper.....	25
Miss Harriet C. Wirth.....	25
Mrs. F. M. Whitehouse.....	25
Miss Lucy L. Lord.....	10
Miss Dorothy Salisbury.....	10
Miss Margaret H. Garrard.....	10
Mrs. Maria S. Auchincloss.....	10
Mrs. Eugene Pitou.....	5

The club has been conducting a nation-wide campaign to acquaint the public with our total lack of aeroplanes in the army, navy, national guard and naval militia. Although this country gave the world the first practical aeroplane, the first hydroaeroplane, and the first flying boat, and we are supplying 1,000 aeroplanes and 2,000 motors to Europe, we are today behind all the first- and second-class powers and their colonies—very much behind Japan, China, Switzerland, Australia and Morocco.

Our navy, which boasted three years ago of being the first navy in the world to have an aviation section, has, at this time, three years later, but five aeroplanes in commission and five more ordered. The half dozen aviators in the navy who hold aviators' certificates have had no opportunity to gain experience in reconnoitering, have never manoeuvred with a fleet, and do not know what ships and submarines look like from the air.

The United States Army has a few more aeroplanes than the navy—about half a dozen. But it also has very limited resources. The very aerodrome used as an aviation centre at San Diego is private property, which is allowed use through the generosity of Mr. John D. Spreckels.

The army aviators have never had practice in operating with troops; our army has no aero observers; has never practiced firing with aviators as "spotters"; the bulk of officers and the rank and file have never had an opportunity of familiarizing themselves with the aeroplane. Neither the Atlantic or Pacific coast defense has aeroplanes; their big guns have no aerial eyes. The Philippine Islands, the Hawaiian Islands and the Panama Canal have no aerial protection.

The national guard and naval militia have had no experience with aeroplanes and the officers and men have never had an opportunity to become acquainted with its possibilities as a scout and range finder for big guns.

But for the Aero Club of America, which sent avi-



ators to the manoeuvres of the national guard of the States of New York, Pennsylvania and Vermont, not a single State would have had aeroplanes at the manoeuvres. And yet, our militia is supposed to be the backbone of our defences.

The plight of Russia, to which Mr. McMillin refers in his letter, shows the terrible price that a nation must pay for being aerially weak. Yet, Russia had 400 military aviators at the beginning of the war, while we have only a dozen. Germany had 1,000 aviators well trained, with an average of four machines at the disposal of each aviator, and, as is shown from reliable sources, the advantage gained through the effective scouting, directing artillery fire, and destroying bridges, railroads and bases are primarily responsible for the success of the German forces.

A country-wide effort will be made by the Aero Club of America and its affiliated aero clubs to raise the \$450,000 between now and next February. Subscriptions should be sent to The National Aeroplane Fund, Aero Club of America, 297 Madison Avenue, New York City.

A public subscription for aeroplanes in Germany in 1912-1914 netted \$1,808,626, and the public subscription in France for aeronautical defense reached, at the last report, \$1,222,969.

### Reasons For Worrying Over the Status of Aeronautics In the Navy

**I**N an interview granted to *The Herald*, Secretary Daniels makes statements on which we shall comment in succession. He says:

"The second phase regards aeronautics. The European war has conclusively demonstrated the importance of aerial service in all military establishments. Their ability to divert surprise attacks can hardly be overestimated.

"Unfortunately we are not so strong in this respect as one might desire. We are, however, progressing and within the last few years our equipment has been enlarged and the number of pilots gradually increased."

*With only five aeroplanes in commission in the navy and five ordered, and less than one dozen officers trained to pilot aeroplanes, of which only two have had experience in operating with warships, can we, Mr. Secretary, say that we have progressed?*

"The last Congress approved of my selection, which was recommended by a board of naval officers of the abandoned Pensacola Navy Yard as an aviation station, and during the last winter in the vicinity of this station we had important exercises in which the submarines and mine layers have worked with the air craft."

*Admitting that conditions at Pensacola are ideal for training officers to fly, is it advisable to keep trained officers there, keeping them in the class of fair-weather aviators, depriving them of training under conditions sufficiently severe to enable them to fit themselves for emergency?*

*Again, is it not folly to keep all the navy's aeronautical equipment—even if it does consist of only five aeroplanes—at one place—and such an out-of-the way place—and risk losing all in a fire, storm, or other unforeseen trouble?*

"Our principal trouble in aeronautics has been to obtain a suitable motor. Just before the outbreak of the war in Europe we had placed an order for two

foreign air craft, one in France and one in Germany, but, of course, we have been unable to obtain delivery."

*Is it not unfair to blame motors for backwardness due to failure of the Department to place orders for the good machines and motors available in this country? The European countries have four hundred American aeroplanes and eight hundred aero motors, and they have a score of AMERICAS, whereas the U. S. Navy has never even tested one. American flying boats and hydroaeroplanes have rendered invaluable services in the war. A dozen constructors of aeroplanes and thirty concerns manufacturing or developing motors are waiting for the Navy Department to place its orders. Do you consider it wise and patriotic, Mr. Secretary, to depend on foreign products and to make no efforts to induce the creation of a source of supply—at such critical times? If the motor problem is such a harassing problem to the navy, why not hold a substantial motor competition, to induce the development of better motors and test the thirty different motors being manufactured or developed in this country?*

### Aeroplanes To Create Interest In the Militia

**A** NEW reason for having aviation corps in connection with the Militia has been found at Vermont. Heretofore only few people visited the encampments of the National Guard, but this year the aeroplane sent by the Aero Club of America attracted thousands to camp gates, and the National Guard has been brought to the attention of the people of Vermont with new values. The newspapers of Vermont have given front page stories to the skillful demonstrations of Aviator George A. Gray, the officers are enthusiastic, and Governor Charles W. Gates and Congressman Greene, who made flights with Gray, state that they will provide the Guard of Vermont with aeroplanes.

They state that the militia of every State should have aeroplanes for the interest they create in the militia as much as anything else. This brings another reason for developing aviation corps for the National Guard and Naval Militia—and emphasizes the value of the Aero Club of America's splendid work.

### THE NATIONAL AEROPLANE FUND

#### List of Subscribers to the National Aeroplane Fund since the July 19th issue of Aerial Age:

Mrs. Willard Straight.....	\$250
Philip L. Goodwin.....	25
Walter S. Denegre.....	25
Howard A. Colby.....	25
John S. Tooker.....	25
B. W. Peterson.....	25
William L. Porter.....	20
Mrs. Maria S. Auchincloss.....	10
Howard Mansfield.....	10
Miss Lucy L. Lord.....	10
Mrs. Nora M. Pitou.....	5
Eugene Pitou.....	5



# THE NEWS OF THE WEEK

## Curtiss Warplane Mounts 8,300 Feet With Four

Describing a fifteen-mile circle in a spiral climb over the roofs and spires of Buffalo, the Tonawandas and the farmlands of the Niagara frontier, Raymond V. Morris, on August 10th established two new American flying records for altitude with passengers. He used the new Curtiss military tractor biplane, designed for the British government.

In the first flight, Pilot Morris, with Lieutenant William M. McIlvain, of the Marine Corps, and C. W. Webster, of the Curtiss Aeroplane Company, rose 8,200 feet. The ascent was made in 27 minutes and the descent in 5½ minutes. The previous American record for altitude with two passengers was held by Stephen T. MacGordon in a Heinrich machine. He ascended 5,187 feet.

The second flight established another new American record. Morris carried three passengers—Lieutenant McIlvain, who made the official observations; C. W. Webster and E. E. McCleish, of Buffalo. Their total weight was 800 pounds. He ascended 8,300 feet, when the barograph stopped recording. After climbing steadily for five minutes beyond that mark he descended, shooting to the earth in a spiral sweep at the rate of ninety-four miles an hour. The descent was made in five and one-half minutes.

The army experts who saw the flight and the pilot and Lieutenant McIlvain were confident that the war machine could have climbed with its load another 4,000 feet. The world's record for altitude with three passengers is held by von Lossi, an Austrian aviator, who ascended 15,650 feet in 1914.

A 25,000-foot barograph is on its way to the Curtiss plant, and when it arrives Pilot Morris, carrying Lieutenant McIlvain, will challenge the world's record of 21,000 feet, which was made in 1914 over Johannisthal, Germany, by a pilot flying alone. Later the Curtiss Company will try to establish an altitude and duration record with five passengers.

This war machine which is known as Model R, is being put to severe tests to satisfy Glenn H. Curtiss, that he has met all the requirements for a fighting warplane. This machine is equipped with an eight-cylinder Curtiss motor, developing 160 horsepower. It is of the tractor type. The observers ride in a cockpit in front of the pilot, who sits back of the planes. It is capable of carrying 1,500 pounds dead weight, which would include a machine gun and bombs.

The army experts were satisfied that today's flights demonstrated that the need for a heavy war machine capable of rising rapidly to a great height had been met. The machine has the sustained power and speed for carrying its load at high altitudes. So perfect was the control at the 8,000-foot mark that the pilot removed his hands from the wheel while driving at 94 miles an hour.

### Gilhooley To Fly at the Gallaudet School.

The well-known racing driver, Gilhooley, has joined the Gallaudet School, and will soon start in training.

## Flies over Lynn

Carrying Miss Dona Montran, one of the actresses in "The Birth of a Nation" film production, Chauncey Redding made a 50 minute flight over Lynn, Mass., in his Burgess-Wright aeroplane.

A novel advertising stunt was tried which proved very successful. Miss Montran wore an aviator's costume and carried 100 pennants advertising the "Birth of a Nation."

To each of 75 of these flags was attached a pair of tickets. The dropping of the pennants was a signal for a scramble on the part of persons below to get possession of the tickets. The idea proved novel and attractive to the crowds.

On the descent of the machine Miss Montran expressed herself as delighted with her 50 minutes in the air.

## New Thomas Company Formed to Market Motors

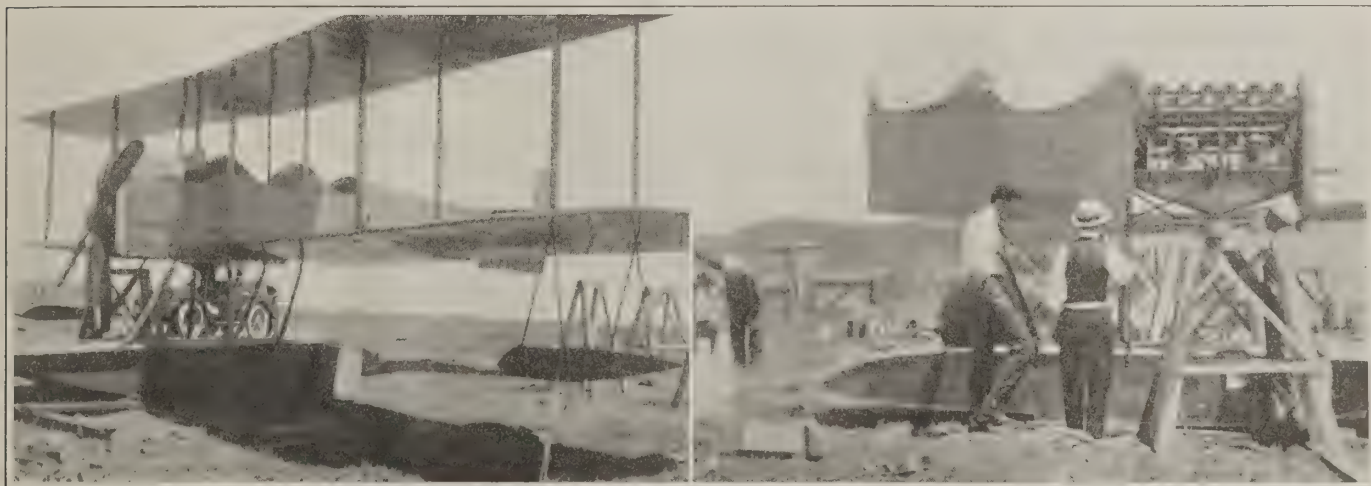
To fill the unprecedented demand for reliable, high-powered aeronautical motors required by our own government and foreign nations, W. T. Thomas, of the Thomas Bros. Aeroplane Co., Ithaca, N. Y., has organized the Thomas Aeromotor Co., papers for which have been filed at Albany. The incorporators are: W. T. Thomas, and E. B. Cresswell, of Ithaca, N. Y., Harold N. Bliss, George H. Abel and Raymond Ware, of Boston, Mass.

The new Thomas Aeromotor Co. starts out with every qualification for producing a motor which should prove capable of meeting the increasing severe conditions of service under which present-day aeronautical motors must work.

The construction of the first lot of these motors is well under way, and plans are completed for the productions in large quantities. As would be expected, there are incorporated in this new design many original ideas calculated to give an all-round efficiency heretofore unattained in this country. The general layout calls for a compact, light-weight V-type motor of 150 to 180 H.P., operating at speeds of 2,000 to 2,500 R.P.M., any desired propeller speed being obtained by gear reduction, as in the well-known English "Sunbeam" motors. These high speeds have been made possible by the employment of large valves, exceptionally light pistons of a special alloy, and connecting rods machined all over from forgings having an elastic limit of 280,000 lbs.

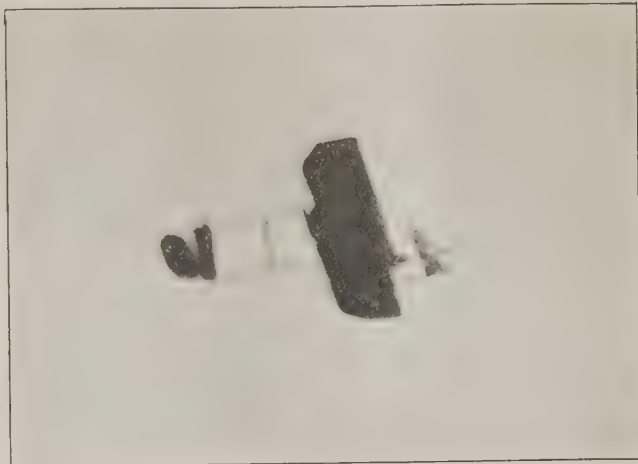
Due to Mr. Thomas' connection with the new company, this motor has been designed to meet the particular requirements of the Thomas military tractors, which have proven so satisfactory both here and abroad. However, its designers have not lost sight of its equal adaptability to the pusher type. Provision has also been made to take care of counter-clockwise driven crankshaft, to provide for installation in twin tractors or pushers of the latest type war planes in use abroad.

The Thomas motor is equipped to meet all military requirements with the latest accessories, such as self-starter, wireless drive, tachometer, etc. The first lot of motors will be coming through about September 1st.



Two views of the new Hall-Scott motored Glenn L. Martin Military Tractor.





Mr. George A. Gray flying for the National Guard of New York at Camp Whitman.

#### Willoughby Hydroaeroplane Tried Out at Newport

Capt. Hugh L. Willoughby put his new hydroaeroplane through trials at Newport on July 30th. The machine, which follows the general lines of the ones with which Capt. Willoughby has been experimenting for several years, was started last winter at his winter home at Point Seawall, Fla., and finished at Newport, where he has his summer residence.

Capt. Willoughby reports that the trials of the new machine were entirely satisfactory.

#### Wants Naval Militia for Wisconsin

The Milwaukee Aero Club, which intends to work for the establishment of a military aeronautic organization, will attempt as a preliminary step toward the realization of the project the establishment of a naval militia organization.

#### New Aeroplane Factory at Buffalo

The Coombs Aeroplane Company has been incorporated, according to papers filed at Albany. The company is capitalized at \$150,000 and it is to be located at Depew. An old knitting mill is to be put in shape for the company which is to commence operations in several months. It is reported that in the manufacture of air-crafts the company will give employment to a number of men. Contracts have been made for the necessary machinery and installation is to take place without delay. Maurice Coombs, a French aviator who was interned in Holland, is the organizer of the company, and it is said several Buffalo financiers are interested.

The incorporators, as given on the certificate filed at Albany, are: Mrs. Coombs, Leslie F. Robinson and Harold V. Cook. The two Buffalo men are lawyers.

#### Governor Gates of Vermont After Flight with Gray Advocates Aviation Corps for Militia

In sending an aeroplane to the encampment of the Vermont National Guard, the Aero Club of America has started a development of great importance—a movement to add an aviation section to its National Guard. This decision follows the demonstrations given by George A. Gray, the aviator who was assigned by the Aero Club to assist in the Vermont National Guard maneuvers which lasted from August 2d to August 10th.

After reviewing the Guard on August 7th, Charles W. Gates, governor of Vermont, made a flight with the aviator, and flew for some time above the parade grounds. Congressman Greene also went up, and both were very enthusiastic over the immediate establishment of an aviation section for the National Guard.

Gray has made a number of flights during the maneuvers, giving bomb-dropping demonstrations, during which he struck the camp and headquarters many times with one-pound dummy bombs. General Tilliston, the commanding officer, said yesterday that he favored the use of a military aeroplane in connection with the work of Norwich University, a State military school.

#### Art Smith's Latest Stunt

Not content with looping-the-loop many times in succession at night, Art Smith has added another feat to his laurels. Recently he wrote his name in the sky in old English script so plainly that the blue smoke penciling was visible for a good many seconds afterwards.

#### De Lloyd Thompson in the East

After a very eventful exhibition tour in the West, Mr. De Lloyd Thompson returned to the East last week. In addition to securing an altitude record, Thompson flew over the Continental Divide, Montana, at a height of ten thousand feet, in his Gyro motored tractor. He is so enthusiastic about the service rendered by the Gyro that he has placed an order for another one, to be delivered in the near future.

#### Elling O. Weeks Takes Up Aeronautics Again

Elling O. Weeks has really been out of aeronautics since the Fall of 1913, when he made his last flight at Denver, but early in the Spring of this year the "bug started to work," as he describes it, and he purchased a Hall-Scott Motor and ordered a tractor biplane. The motor was delivered, but not the plane, and Weeks, with the assistance of his partner Eugene A. Riggs, of Terre Haute, Indiana, set themselves the task of making their own plane. They commenced work on May 24th and on June 24th the work was completed. On its first flight Weeks kept it in the air twenty-five minutes. Weeks is now carrying passengers at Engle Grove, Iowa.

#### C. Ray Benedict at Cedar Point, Ohio

C. Ray Benedict, flying a Benoist flying boat, has been carrying passengers and making exhibition flights at Cedar Point, Ohio, since the end of June and will continue until the end of September, when he will go to Florida and open up a school for land and water flying. Last Fall Benedict temporarily gave up flying, but this Spring the fascination was so great that he again got into the game. This is his fifth season.



The Huntington Military Tractor which has been shipped to Mexico.

### Millman Tries Out New Johnson Motored Hecksher Flying Boat.

On August 8 P. C. Millman tried out the new Hecksher flying boat in the vicinity of New York. The machine was constructed by Wahlen, and is equipped with a 90 h. p. Johnson motor. Although minor difficulties were encountered in regard to the balance he reports that the Johnson motor delivered tremendous power. As soon as a few changes are made Millman expects to have the craft out again and hopes to make a number of extended flights. As soon as Gilhooley becomes proficient in handling the Gallaudet School machine he will take charge of flying the Hecksher flying boat.

### Garden City Notes.

Gallaudet's 100 Gnome motor has now been completely overhauled and mounted in the speedy Gallaudet tractor, which will be flown by P. C. Millman at the Plattsburg manoeuvres.

During Millman's absence Steve MacGordon will take charge of the school, so that there will be no interruption in training the number of pupils now on hand.

Blair Thaw is now handling the machine in fine shape and will no doubt be able to take charge of piloting his own machine as soon as it is completed at the Huntington shops, which will be about two weeks.

The Heinrich Aeroplane Company has just received delivery of a new twelve-cylinder horizontal opposed air-cooled 105 h. p. Ashmusen engine, which will be mounted in the Heinrich military tractor. Trials of this machine equipped with the new engine will be awaited with interest.

### Lieut. Pietrowsky Decorated

Lieut. Gregeire Pietrowsky, of the Russian army, who has been in this country for some months inspecting aeronautical equipment, has just been decorated by the Russian government for bravery. Lieut. Pietrowsky has also been awarded an order from the Servian government.

### Ridder Sues Hearst Over Air Tangle

Herman Ridder, editor and owner of the *New York Staats-Zeitung*, recently started a suit in the Supreme Court against the Star Company, publisher of Hearst's *New York American*, charging libel and asking for damages of \$250,000.

Mr. Ridder says he was damaged by an article which appeared in *The American* on May 30, and which said Ridder was engaged in the manufacture of aeroplane parts for England and her allies.

### International Oxygen Co. To Construct Generating Plant for Navy

The United States Navy Department has awarded to the International Oxygen Company the contract for the erection of the hydrogen generating plant for ballooning purposes at the Aeronautic Station, Navy Yard, Pensacola. They have also received the award from the Government for the installation of a system for generating oxygen and hydrogen at the Washington Navy Yard, Washington, D. C.

### Puget Sound News

Seattle has been given a rare treat the last two weeks with almost daily flights over the city by either Herbert Munter or T. T. Maroney. The latter after putting in a test week carrying passengers, thought so much of the opportunities at Seattle that he has moved his entire outfit down from Everett consisting of a 60 h.p. land machine, an 80 h.p. hydro and a 100 h.p. flying boat. Ed. Hubbard is the first student to enroll here with Maroney, but several others have signed up and will commence training in a few days.

What the Puget Sound country has in the way of available flying grounds were looked over last week by Col. Samuel Reber and Capt. R. C. Marshall, of the Army Commission. While nothing definite was given out they commented favorably upon the sites shown.

Aviator Fred De Kor was at Seattle last week.

Herbert Munter is making some needed repairs on his school machine and expects to have his pupils out soon.

\* \* \*

Mr. R. A. D. Preston, of the Aeronautical Department of the Goodyear Tire and Rubber Company, was a recent visitor to the Aero Club of America. Mr. Preston reports that the Goodyear Company is doing a tremendous volume of business in aeroplane tires, fabrics and accessories these days.

\* \* \*

Mr. F. C. J. Eden and David McCulloch are starting a flying boat school in the vicinity of New York with two Curtiss flying boats.

(Continued on page 529)



Four views of the very elaborate boat-house hangar which the Curtiss Company has constructed for Mr. Robert Glendinning, the Philadelphia banker, and which is now anchored in the Delaware River. Beside the accommodation for the flying boat, it contains a workroom for the mechanic, a bedroom, and a small room with refrigerator for refreshments. Picture No. 1 is a view which faces the club house across the river. No. 2 is the hangar closed. No. 3 is the deck, facing the club house, which has been embellished with a few flower boxes. No. 4 gives a view of the flying boat about to be landed. Through a patent of Mr. Glendinning this can be done comfortably by three men. A small iron truck is drawn over across the deck by a steel rope and windlass, and in the picture the pontoon supports over the side of the door, which falls out into the river, can be seen. The door acts as a slip for bringing the boat in.



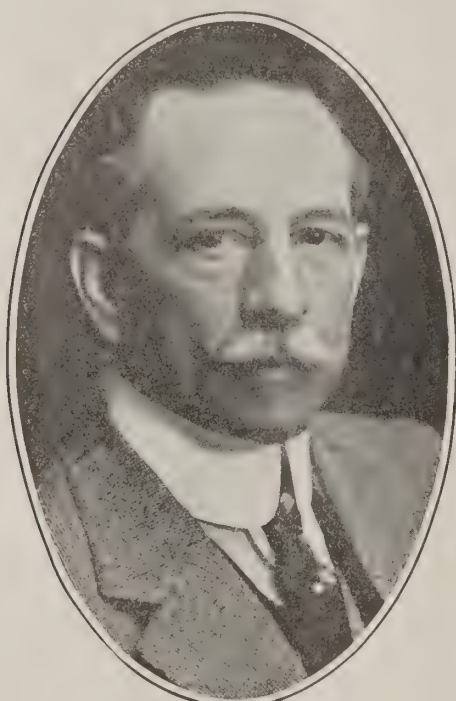
## The American Society of Aeronautic Engineers Appoints Henry A. Wise Wood and Elmer A. Sperry as its Representatives for Advisory Board

The American Society of Aeronautic Engineers, which was organized at the request of Mr. Thomas A. Edison, and which was requested by Secretary of the Navy Daniels to appoint two members to serve on the Navy's Advisory Board, has, after polling its members for their selection, nominated Messrs. Henry A. Wise Wood and Elmer A. Sperry, together with a special committee of the following aeronautic engineers and experts to co-operate with them: Orville Wright, Glenn H. Curtis, W. Starling Burgess and Charles M. Manly, to advise on matters pertaining particularly to the theory and construction of aeroplanes and aeronautical motors; Peter Cooper Hewitt, John Hayes Hammond, Jr., and Joseph A. Steinmetz to advise on matters pertaining particularly to the application of aircraft for warfare; Captain Thomas S. Baldwin, A. Leo Stevens, Ralph H. Upson and Raymond B. Price to advise on mat-

received from members of the society, who, in sending in their selections, pointed out that no two men in aeronautics today have expert knowledge of every branch of the science of aeronautics. In most cases, therefore, they proposed additional names of experts in different branches of the science.

As the requests of Secretary Daniels and Mr. Edison were for two members of the society, it was not possible to include even one expert from each branch, therefore the special committee was formed.

Aeronautical inventions submitted to the navy must be considered from three angles: The broad purpose, the theory and the mechanical details of the invention. Using a purely hypothetical case to illustrate the problem of supplying aircraft that can be easily launched from a battleship and hover in the air above ships and submarines and drop bombs, an inventor may submit a helicopter equipped with



Mr. Henry A. Wise Wood.



Mr. Elmer A. Sperry.

ters pertaining particularly to dirigibles, balloons and parachutes.

Messrs. Henry A. Wise Wood and Elmer A. Sperry constituted the popular selection, being nominated by eight-tenths of the total votes. This is due to their knowledge of the navy and of the application of the aircraft for naval purposes, as well as to their thorough knowledge of the different branches of the science of aeronautics and to the fact that they have the confidence of the experts of the different branches of the science of aeronautics and will therefore have their good-will and co-operation. Both are scientific engineers, recipients of the Elliott Cresson and John Scott gold medals of the Franklin Institute, respectively, awarded for inventions of a basic character. They each have hundreds of successful inventions to their credit.

Mr. Wood is president of the American Society of Aeronautic Engineers, vice-president of the Aero Club of America, and was a member of the Aerodynamics Laboratory Committee, appointed by President Taft in 1912. He is the son of ex-Mayor Wood of New York.

Mr. Elmer A. Sperry is vice-president of the American Society of Aeronautic Engineers, member of the Aero Club of America and of the Aeronautical Society. He is the father of the gyroscope, which he has applied to more than twenty different uses. The Sperry gyroscopic stabilizer for aeroplanes in June, 1914, was awarded the first prize for safety devices of \$10,000, by the French Government. It also was awarded the Collier trophy by the Aero Club of America.

The special committee of prominent aeronautic engineers and experts was appointed as a result of many suggestions

a parachute device (the latter for safety). The possibilities of the helicopter, which can rise vertically in the air and hover over any spot, for naval purposes, would be promptly appreciated by Messrs. Wood and Sperry, but in order to pass on the correctness of the theory of the craft, and to find whether the mechanism and motor power are correctly proportioned and whether the parachute would be sufficient to keep the craft and pilot, or only the pilot, from plunging into the water in case of accident to the machinery, might require the co-operation of the experts of different branches of aeronautics. The experts on the application of aircraft to warfare would in turn pass on the weight of explosives to be carried for effective attack, the provision made, or device submitted to insure accuracy in bomb-dropping, etc.

Now that the matter of selecting representatives to co-operate with the Advisory Committee of the navy has been settled, the American Society of Aeronautic Engineers will develop its general plans.

In the organization of the society it was provided for the addition of directors, to be appointed as follows: Two by the army, two by the navy, one each by the Smithsonian Institution, the Post Office Department, the Weather Bureau, the Bureau of Standards, the Massachusetts Institute of Technology and the University of Michigan.

The society has received a large number of applications for membership, but it is the intention of the Executive Board to apply the severe requirements of such technical societies as the American Institute of Electrical Engineers and the American Society of Mechanical Engineers in passing upon candidates for membership. This is in accordance with Mr. Edison's request.

# THE SPERRY DRIFT INDICATOR

By NEIL MacCOULL

In making a flight between two distant points separated by water or unfamiliar ground, an aviator usually uses his compass in much the same way as a sailor uses a marine compass. At any time during the trip he may find his bearings by plotting a line on his chart in the direction he has been traveling, and estimating his rate and time of travel gives the point on this line representing his position at that moment. Such was the original plan for navigating the "America" on her proposed transatlantic trip. But considerable error is possible in steering by compass because no correction is made for drift; i. e., having the line of flight varied by a side wind of unknown velocity.

This is illustrated in Fig. 1, in which  $OF$  is the direction in which the aeroplane is steering, and would be the direction of travel if there were no side wind. The line  $OS$  represents the side wind in direction, and its length bears the same ratio to the length of  $OF$  as the velocity of the side wind bears to the speed of the aeroplane.  $OR$  is the true direction in which the aeroplane is traveling. A side wind of 10 to 25 miles an hour may often be encountered, and in a six or eight hours' flight, the aeroplane may have drifted so far from its intended course as to completely miss its objective point.

Realizing these limitations to aerial navigation by compass, the Sperry Gyroscope Co. has developed a drift indicator which shows the exact direction of travel. This indicator consists of a prismatic monocular telescope mounted in such a way that a clear vision of the ground below may be obtained. When looking through the telescope, which is so made that it is always in focus, five fine parallel hairs are seen across the field of vision. On account of the speed of the aeroplane every object seen through the telescope passes so quickly that it looks like a line. In using the indicator it is simply necessary to turn the telescope ( $C$ , Fig. 2) in its frame by the handle marked  $D$ , until the hairs just mentioned are parallel to the streaks passing the field of vision. A pointer secured to the telescope makes it possible to read on a graduated scale attached to the frame, the angle between the true course taken by the aeroplane and the course indicated by the compass. A steel wire passing through flexible tubes connects the telescope with the adjustable lubber line of the compass, so that it is never necessary to read the pointer of

the telescope except to check the accuracy of the lubber line. In use, the pilot keeps his heading on the lubber, which is constantly shifted by the observer to compensate for the drift. Thus the aeroplane is always held to its desired course.

The compass used in this set is the well-known Sperry Adjustable Lubber Line Air Compass, built to the specifications of the British Admiralty. The compass bowl is supported from the outer shell by springs for protection against the vibration of the aeroplane and shock when landing. The life and accuracy of the compass are considerably increased by this spring mounting. The compass card and lubber line are painted with a luminous radium compound which per-

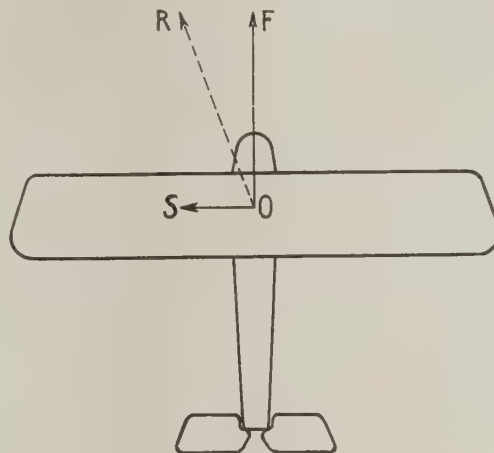


Fig. 1.

mits of the card being read in the dark at a distance of three feet. A small lamp is provided which shines on the lubber line to facilitate reading the card at twilight. This lamp is lighted by a single cell dry battery.

The weight of the drift indicator and compass complete is only seven pounds.

Fig. 2.

Sperry drift synchronized set, consisting of the telescopic drift indicator ( $C$ ), and a Sperry adjustable buffer line compass ( $A$ ), synchronously connected by double Bowden wires ( $B$ ), so that when the drift of the aeroplane is determined by the telescope, the compass is automatically set.





# SPRUCE AEROPLANE STRUTS UNDER COMPRESSION

By J. C. HUNSAKER, U. S. NAVY

Instructor in Aeronautical Engineering, Massachusetts Institute of Technology

During the past year Messrs. J. L. T. Santos and Wai Po Loo\* undertook an investigation of the performance of spruce struts under compression. Their experimental results are here presented in summary for the benefit of aeroplane designers, together with some notes which may be of interest.

**Wood Employed.** Maine white spruce, cut in the winter of 1913-14, sawed into 2" plank in the spring of 1914 and stored in a well ventilated lumber shed until April, 1915. Selected planks free from knots, shakes, and other defects were sawed and planed into straight grained sticks varying in length from one to six feet. These sticks were untapered, some of section  $1\frac{3}{4}$  by  $1\frac{3}{4}$  inches, and some of section  $1\frac{1}{2}$  by  $\frac{7}{8}$  inches.

**Fastening.** Each stick was fitted with pinned sockets. The rectangular sticks were tested with the pin axis parallel to the short side, and to the long side.

**Testing.** Each stick was loaded in compression in a testing machine until it buckled and refused to take more load. This maximum load was taken to be the "crippling load." No sticks were broken, as all failed by buckling.

**Modulus of Elasticity.** The modulus of elasticity,  $E$ , of the wood was computed by bending a beam and observing the rate of deflection under central loading.  $E$  was found to have an average of about 1,825,000 pounds per square inch. This value is taken rather than the modulus for compression because long struts fail by bending rather than by compression, and also because the bending modulus can be more precisely determined.

**Crippling Stress.** The crippling load in pounds divided by the area of cross section in square inches, is defined as the crippling stress. Values of crippling stress for all sticks tested are plotted in Fig. 1 on the ratio  $\frac{L}{K}$  as abscissae, where  $L$  is the length of the stick and  $K$  the radius of gyration defined as  $\sqrt{\frac{I}{A}}$ .  $I$  is moment of inertia of section about an axis parallel to the axes of the pins in ends, and  $A$  the cross section. The curve drawn is an average curve expressing the mean results for sticks of all lengths, areas, and fastenings. It was found of slight importance whether

the socket pins were parallel to the short or long side of the section. In Fig. 1, each point represents a single stick. The mean curve may be taken as representing the crippling of an average stick of spruce of the best quality.

**Euler's Formula.** For long struts (with a ratio  $L/K$  greater than 70) it has been customary to employ Euler's formula to compute the crippling stress.

$$\frac{P}{A} = \frac{\pi^2 E}{\left(\frac{L}{K}\right)^2}, \text{ where } 9.87 \text{ for pinned ends.}$$

The experiments here reviewed indicate that for this grade of spruce the constant of Euler's formula should be about 8.72 in order to express an average result. Hence, in aeroplane design where  $L/K$  is greater than 70, we may take

$$\frac{P}{A} = \frac{8.72 E}{\left(\frac{L}{K}\right)^2}$$

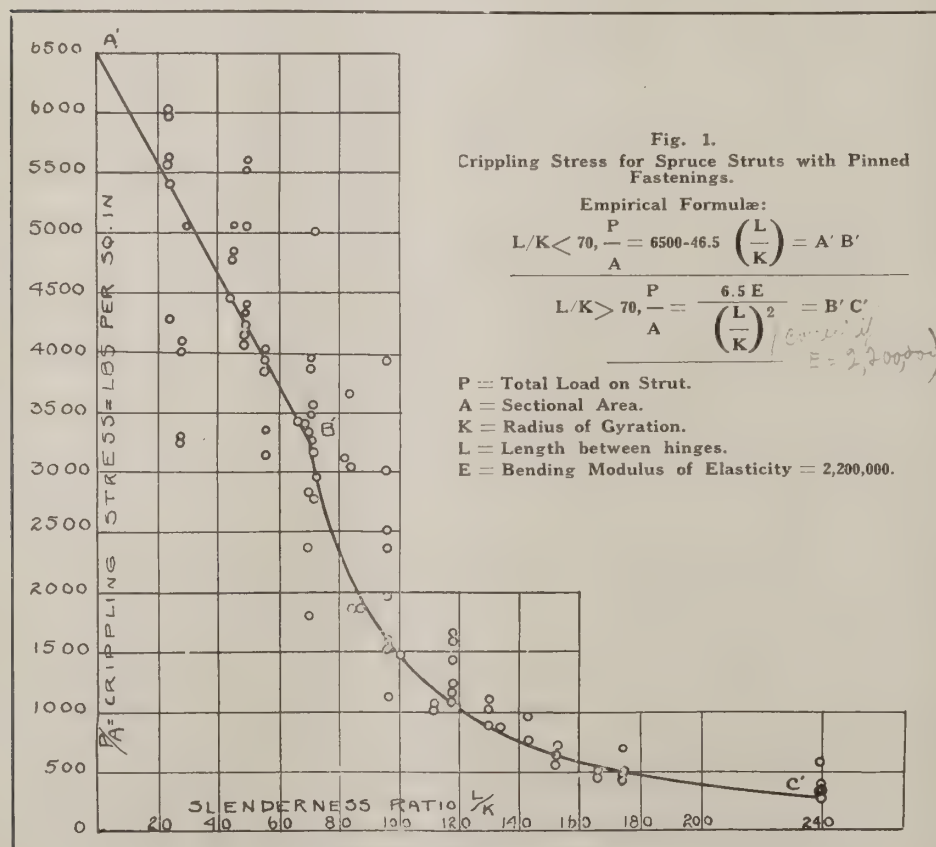
**Straight Line Formula.** For short struts (ratio  $L/K$  less than 70) a so-called straight line formula is in general use. For this grade of spruce, we may use as an approximate formula expressing the average result of these tests:

$$\frac{P}{A} = 6500 - 46.5 \frac{L}{K}$$

**Factor of Safety.** In all engineering structures a factor of safety is allowed for unusual conditions of loading not contemplated in the design. This factor is often between 4 to 8 in aeroplane wing construction. In addition to the above, we should allow a factor of safety for material. For spruce struts, it appears from these tests that there may be a variation in strength of as much as 50 per cent below or above the average strength of a number of similar specimens, loaded in a similar manner. This irregularity in crippling load is possibly due to very slight initial curvature in the struts, to a slightly unsymmetrical loading not readily detected, and to variations in elasticity between sticks cut from different parts of the same log. In view of the uncertain nature of the strut fastening in most biplanes and especially in view of the possibility of an initial curvature due to stretching or breaking of wire bracing under load, bending of wing spars and general elastic yielding of the wing girder, it is recommended that a factor of safety 2 be allowed for biplane struts in addition to the load factor 4 to 8. This would then bring the gross factor of safety between 8 and 16.

**Tapering.** In connection with the general investigation of struts, the effect of tapering struts as usually employed was found to diminish the strength unless very carefully done. In a particular case of an excellent looking tapered biplane strut submitted by a manufacturer, the strength was found to be considerably less than that of an untapered strut of similar length, section and material. The tapered strut was only one-half pound lighter than the other. The photograph of Fig. 2 illustrates failure by buckling of a tapered strut. Note that the central portion remains straight while the ends\*\* bend in sharply. An untapered strut is shown buckled in Fig. 3. The curvature is circular. Tapering a strut appears to save very little weight and to be dangerous practice. Tapering is therefore not recommended beyond cutting down six or eight inches near the ends to fit into the sockets. The effect of taper will be considered further and at the present time no conclusions can be drawn as to the proper method of tapering. The type shown in Fig. 4 was found to have a strength equal to that of an untapered strut of the same maximum cross section.

**Fastening.** To avoid initial curvature, pin or hinge sockets are recommended, with the axis of the pin parallel to the long axis of the strut



\*Thesis for Bachelor of Science Degree, Mass. Institute of Technology.

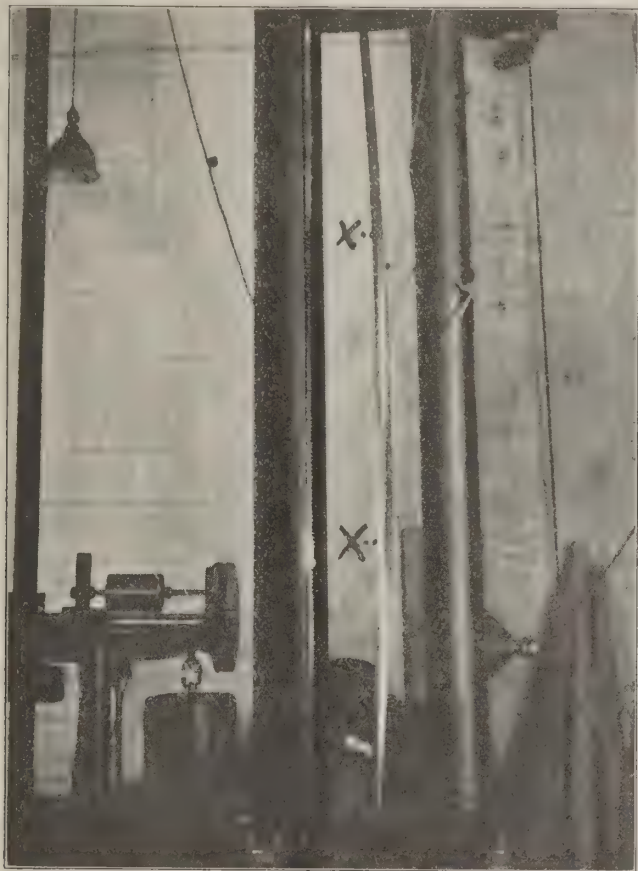


Fig. 2.—Buckling of Tapered Strut. (Note sharp bend at XX.)

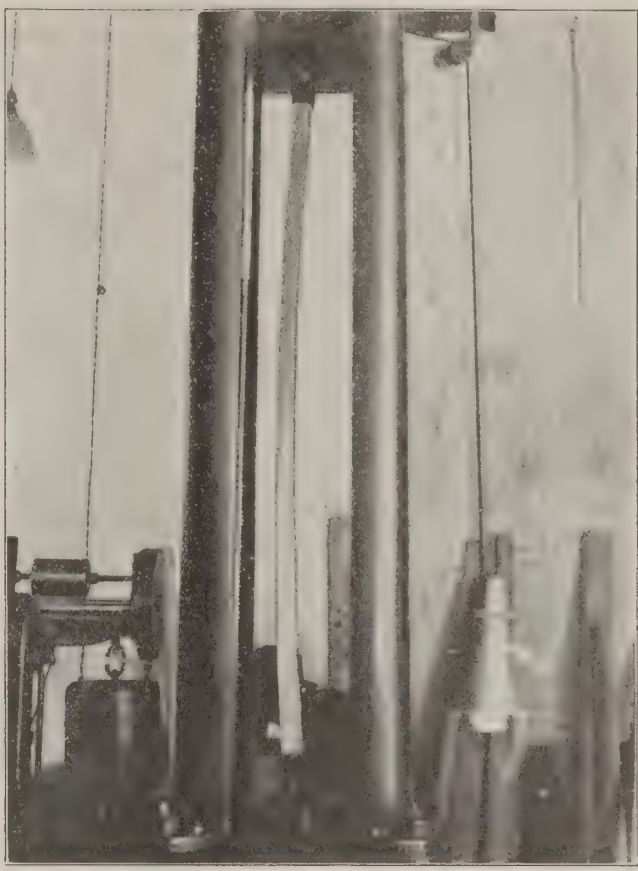


Fig. 3.—Buckling of Uniform Strut.

section. Warped or bent struts should be instantly replaced by true ones.

*Material.* Further tests which it is not possible to give here indicate that Maine and West Virginia white spruce and Oregon red spruce are approximately of equal strength when used as struts. Three white spruce struts averaged about 10 per cent. stronger than three of red spruce, but no conclusion should be drawn from so few specimens.

*Lamination.* The effect of making up a strut of six glued laminations was observed not to alter the crippling load for a given design of strut, although the laminated strut could be buckled to a greater degree without permanent injury. The crippling load of a long strut appears to depend on the modulus of elasticity only. The latter can be little if any affected by thin films of glue.

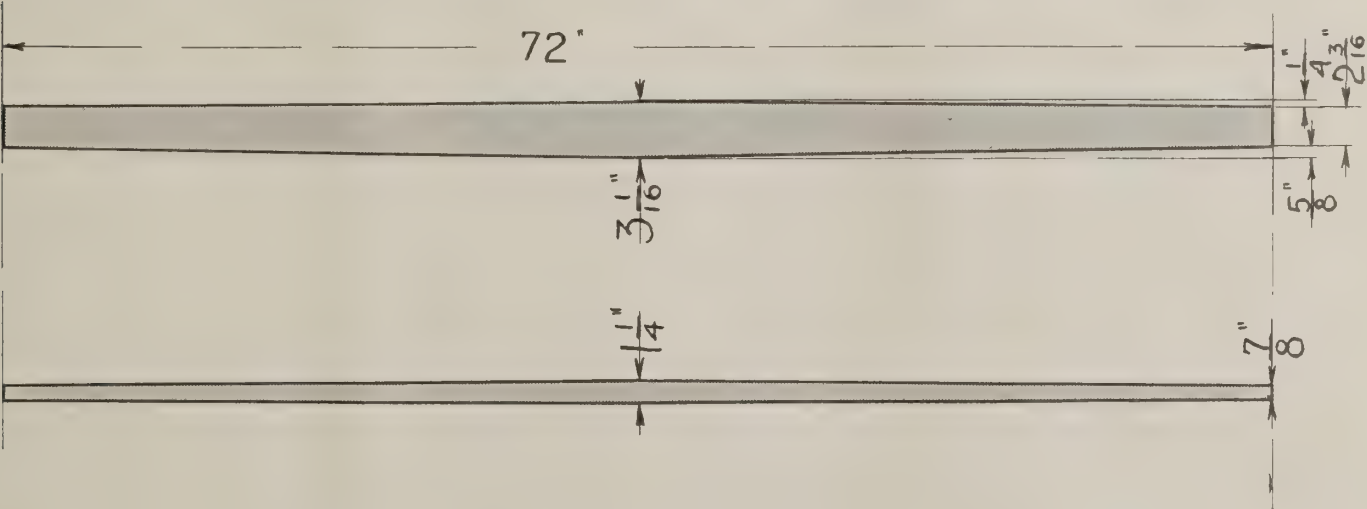


Fig. 4.—Tapered Strut, shown in Fig. 2.

CALIFORNIA NEWS

Bob Fowler left San Francisco last week to join the Curtiss Aeroplane Co., at Buffalo, N. Y.

Art Smith closes his contract with the Exposition, Aug. 8th. Mr. Smith will leave immediately after for the South to fill his contracts.

Silvio Petterossi will fly at the P. P. I. E. Aug. 10th.

Charles Niles arrived in San Francisco July 29, and is having his monoplane assembled at Christofferson's hangar, where Petterossi is also getting his machine in readiness to compete for the Exposition contract.

T. T. Maroney, of Everett, Washington, is doing some flying at a number of towns on the Puget Sound, carrying passengers and giving exhibitions with his new flying boat.

MICHIGAN NEWS

Mr. Barton L. Peck, the Detroit aviator, has had his Curtiss Flying Boat out every day that the weather has allowed, for the past month, making many flights, and always with passengers. Sunday last was an ideal day for flying, and Mr. Peck was out early in the afternoon. He made six flights over the lake and river, circling the stranded *Noronic*, which went aground early Saturday morning. On the last trip out over the lake he had trouble with his motor, and was forced to get a tow back to his hangar.

Detroit aviators and enthusiasts promise much activity in the way of flying and building planes here in the near future.

The new Maximotored Verville-Perry Military Tractor is nearly ready for a trial flight. It is a well-designed plane.

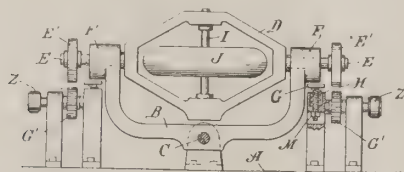


# RECENT AERO PATENTS

BY WILLIAM N. MOORE

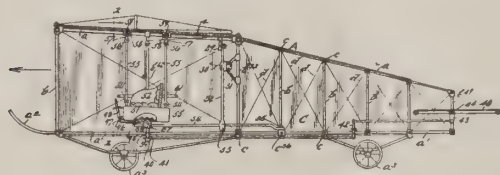
1,134,439. STABILIZING APPARATUS. ALEXANDER S. CHESSIN, New York, N. Y. Filed May 29, 1909. Serial No. 499,181. (Cl. 74-78.)

1. A gyrostat structure comprising a rotor mounted to turn about a normally vertical axis, a frame in which said rotor is journaled, and a support connected with said frame by a normally horizontal pivotal connection, the combined center of gravity of the rotor and frame being below the point of intersection of the rotor axis with said normally horizontal pivotal connection, in combination with a body to which said support is connected loosely to swing about a normally horizontal axis perpendicular to the first named horizontal axis, and members carried by said body and normally out of contact with the gyrostat structure but adapted to engage the same when said body swings and to produce a precession of the rotor.



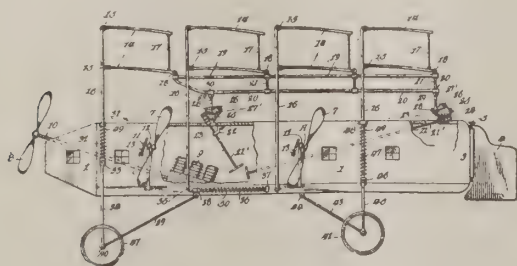
1,144,052. FLYING-MACHINE. JOHN F. O'ROURKE, New York, N. Y. Filed Dec. 4, 1909. Serial No. 531,414. (Cl. 244-29.)

1. A flying machine having one or more main planes and provided with movable planes, an operating member movably carried by said machine, connections interposed between said member and said movable planes to move them simultaneously in opposite directions, means comprised in said connections to move the parts of said connections in opposite directions to set said movable planes simultaneously in the same direction, and adjustable devices connecting said operating member with said connections for setting said planes in opposite directions relatively to each other to be operated by said member when set in the same or opposite directions.



1,145,319. AEROPLANE. AUGUST J. KLONECK, New York, N. Y. Filed Jan. 22, 1913. Serial No. 743,584. (Cl. 244-14.)

1. In a flying machine, a frame, a plurality of rods mounted on the frame, planes pivotally mounted upon each pair of rods, a pair of horizontally extending rods to which certain of the planes are pivotally connected, segmental racks supported by the frame, and means connecting said racks with said horizontally extending rods, said means being actuable to vertically adjust all of the said planes.



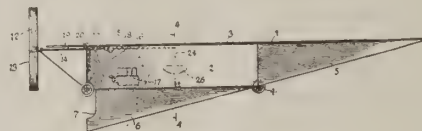
1,141,347. MONOPLANE. FRANK KRAMSKY and EDWARD KRAMSKY, Chicago, Ill. Filed Sept. 13, 1913. Serial No. 789,587. (Cl. 244-14.)

1. An air craft comprising a monoplane, a car supported thereby, a propeller located at the rear of the car, and a central keel below said monoplane, a portion extending below said car comprising two fins hinged at their upper edges and adapted to be swung into different inclined planes.

2. An air craft comprising a monoplane, a car supported thereby, a propeller at the rear of the car, and a central keel extending below said monoplane, a portion of said keel projecting below said car comprising two fins adapted to be moved independently into different inclined planes.

3. An air craft comprising a monoplane, a car supported thereby below said monoplane, a propeller at the rear thereof, and a longitudinal central keel extending below said car that increases in depth from the forward end of the craft to the rear end thereof, a portion of said keel extending below said car comprising two fins mounted on parallel axes, and adapted to be actuated from a position within the car.

4. An air craft comprising a monoplane, a car supported thereby below the same, and a longitudinal central keel extending below said car that increases in depth from the bow to the stern of the monoplane, a portion of said keel below said car comprising two equal parts mounted on parallel rock shafts, means for actuating said rock shafts from a position within the car.

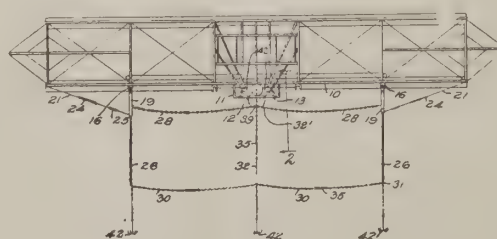


1,146,695. MEANS FOR ATTACHING BOMBS FROM FLYING MACHINES TO OTHER OBJECTS. FRANCIS A. DUGRO, New York, N. Y. Filed May 19, 1915. Serial No. 29,100. (Cl. 244-1.)

1. The combination with a flying machine, of a temporary support for a bomb thereon, a laterally and downwardly projecting noose connected to the bomb, and means to set free the temporary support to release the bomb when the noose is engaged over a relatively stationary object.

2. The combination with a flying machine, of a pair of laterally spaced holders secured thereto, means to support a bomb upon the machine between the holders, a downwardly and laterally extending noose connected to the bomb, and means detachably securing the noose to said holders, substantially as set forth.

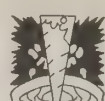
3. The combination with a flying machine and means carried thereby to support a bomb at approximately the longitudinal center of the machine, of a pair of holders spaced laterally on opposite sides of said center, a pair of rigid members slidably supported upon and depending from the holders, chains extending inwardly from the upper and lower ends of each rigid member toward the center aforesaid, means connecting the inner portions of the chains to the bomb, and temporary holding means for the rigid members allowing the same to separate freely from the holders when a relatively stationary object is engaged thereby.





# FOREIGN NEWS

Edited by L. d'Orcy



## FRANCE.

The French air fleet is continuing its remarkable bombing raids into German territory with notable success, as is proven by the official note issued by the French War Office on July 30:

"On the 29th instant our aeroplanes bombarded the Ypres-Roulers Railroad near Passchendaele, the camps of the Germans in the region of Longueval, to the west of Combrès; the German lines on the Brimont hill, near Rheims; the military station at Chatel, in the Argonne, and the station of Burthecourt, in Lorraine.

"During the night of the 29th-30th one of our aviators bombarded at Dornach (Alsace) a factory producing asphyxiating gas. To-day an aerial squadron bombarded the station of Fribourg. Another squadron, including ten aeroplanes from the Paris intrenched camp, dropped forty-four bombs on the station at Chauny (Department of Aisne).

"A squadron of forty-five aeroplanes set out this morning, having as its objective the petrol works of Pechelbronn, between Hagenau and Weissenburg (Alsace). A cloudy sky and many mist banks permitted only part of the squadron to reach the goal. One hundred and three bombs were dropped on the Pechelbronn works. In addition six bombs were dropped on the station at Detwiller, near Phalsbourg, and six on the aviation sheds at Phalsbourg. Every aeroplane came back safely."

This report is particularly interesting in that it records the largest number of aeroplanes—forty-five—thus far employed as a bombing squadron by the French. Prior to this raid the French have sent out large aeroplane squadrons to raid the following places: Bruges and environs (40 machines), the headquarters of the Kronprinz (29 machines), Ludwigshafen (18 machines), Carlsruhe (23 machines), Hattonchatel (35 machines), Libercourt (20 machines), Conflans (38 machines).

The bombardment of the station of Libercourt, effected both by bombardiers and fighting aeroplanes which shelled a train and obliged a German machine to alight, proves that the French air squadrons now possess a type of battle aeroplane more powerful than any of the preceding French machines and armed with a new cannon especially made for them, supposed to fire an inch and a half shell.

The German machines were better prepared for warfare at the beginning and could distance French machines in an air chase. The French brought out more and more powerful motors, protected some of their machines with steel plates and armed them with special guns. These machines in the hands of civilian aviators put an end to German aeroplane raids on Paris.

A document published by the general staff of one of the German armies recognizes the superiority of the French aviation corps in criticisms of the inefficiency of German flyers, particularly in directing artillery fire.

Recently the Germans announced a new machine, supposed to surpass everything yet produced. A letter from a French aviator says regarding an engagement with one of these machines:

"Each time he passed me the machine gun man fired a whole band of cartridges; it was a hail of bullets. Then the machine swung around and came back above me. Four times he repeated the maneuver, and it seemed each time I could see the bullets. My passenger and I fired all our ammunition, but the machine was too fast for us; then we turned to draw the enemy toward our lines. At 1,200 metres he scented the ruse and turned tail."

During the day of July 31 French bombing aeroplanes threw thirty shells on the aviation camp at Dalheim, and also six shells on a military train near Chateau-Salins.

## GERMANY.

A Reuter dispatch from Amsterdam says it is officially stated in Berlin that three allied airmen appeared early on July 30 over Fribourg and dropped several bombs. One civilian was killed and six civilians were wounded. The material damage done is declared to have been unimportant.

A new Zeppelin airship was launched at Friedrichshaven on July 30; it has two cabins and is furnished with small cannon and three propellers, each triple bladed.

## MEXICO.

Piloted by James Dean, an American, who had William Glassen as an observer, a scouting aeroplane belonging to the Maytorena garrison at Nogales, Sonora, fell 300 feet on July 26. The machine was wrecked, but Dean and Glassen escaped with slight injuries.

## RUSSIA.

On August 2 a squadron of Russian seaplanes attacked off Windau (Baltic Sea) a German gunboat that was reconnoitering the coast line. The warship tried to dodge the attack, but in doing this it ran ashore.

The same day a German air squadron consisting of a Zeppelin airship and two seaplanes, was also attacked by Russian seaplanes. In the ensuing fight one German seaplane was brought down and the remainder of the Teutonic aircraft was put to flight.

On August 3 a squadron of Russian seaplanes raided Constantinople dropping numerous bombs on the docks and other harbor works.

## SERBIA.

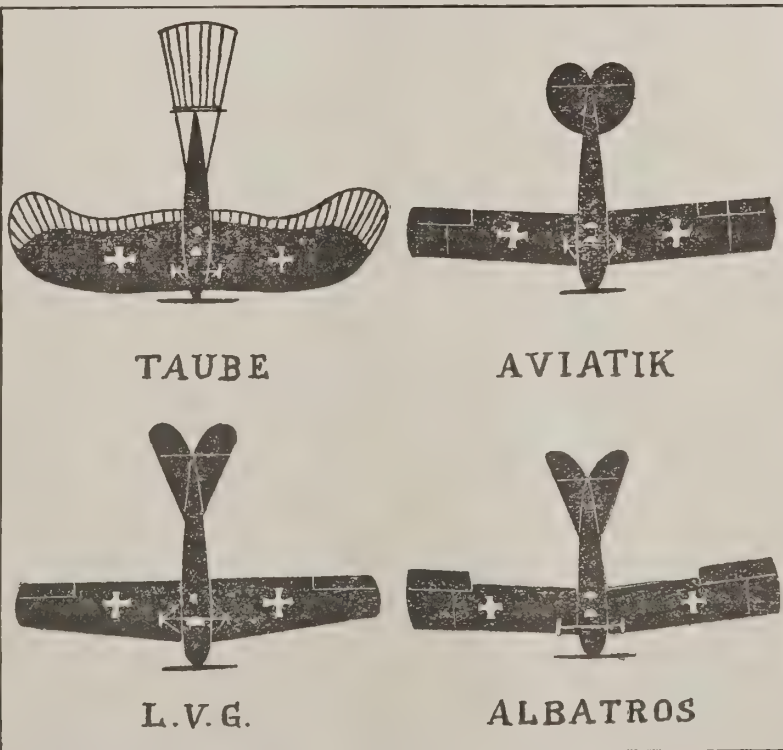
That a squadron of French aeroplanes is co-operating with the Serbian army has been revealed by a late copy of the French weekly *L'Illustration*. This periodical prints a number of letters of Robert Vaucher, a well-known war correspondent. These letters are dated late in April from Belgrade, Nish, the new capital, and from Kragouevatz. Those from Belgrade mention quite incidentally the arrival of the French mission in Serbia. Here is the first hint:

"Several persons whom I questioned as to whether they were not afraid of the shrapnel, whose visitations had become more frequent in the last two days, the Austrians persisting in firing, although unsuccessfully, on our aviators, replied, with an air of absolute security, 'There is nothing to fear; the French are here.'"

M. Vaucher continues: "It was a fine day. While dining in the pretty villa where the French aviation officers live, I noticed that the pilots with each mouthful cast their eyes aloft, where the sky seemed to be inviting the most daring flights. At dessert, Captain Martinet could restrain himself no longer. Followed by the chief of scouts, Captain Rochefort, he started for the hangars.

"We went to join them. For the last two days the French aeroplanes have been looking over the enemy's country. Our officers have performed a miracle by transforming a little plateau into an aviation camp. Before their hangars of canvas the machines are ready to start. One after another the great birds take flight, some toward Hungary, others toward Croatia, others still to fly about Semlin, whence the shrapnel come."

Flyleaf, issued by the French army authorities, showing the overhead silhouettes of the four principal types of German military aeroplanes. The Taube (Dove), so called on account of the shape of its wings, was originally the German army machine par excellence; but it has lately been discarded in favor of the L. V. G. type tractor biplane, along the lines of which most present-day aeroplanes of the German army are built





## The Deltman Model

By Robert La Tour

The Deltman model described herein holds the official duration record of the Pacific Northwest Model Aero Club. Although many unofficial flights of well over a hundred seconds have been made, this model with 96 seconds is undefeated as vet. officially.

### Description

The main stick is 45 inches in length and is of T section, formed of  $\frac{1}{4}$ " spruce, the top piece being  $\frac{3}{4}$ " wide its entire length and the lower  $\frac{3}{4}$ " at center tapering to  $\frac{3}{8}$ " towards the ends. The lower piece also tapers from  $\frac{1}{16}$ " where it joins the upper piece, by glue and brads, to  $\frac{3}{8}$ " at its lower edge. The front and rear cross pieces are 12" long by  $\frac{3}{4}$ " wide and about an  $\frac{1}{8}$ " thick, streamlined. A piece of aluminum is bent around each end of the front cross piece and drilled to receive the hooks of the rubber skein. The propeller bracket is of heavy aluminum, bent to the shape shown, and bound to rear cross piece with thread.

The front plane spans 15" by 4", maximum chord. The outline is No. 22 piano wire, and the 5 ribs of No. 11 wire, with  $\frac{1}{2}$ " camber. The tips from the last rib out are turned up about  $\frac{1}{2}$ ". The front edge is raised  $\frac{3}{8}$ ". Construction can be bamboo if desired.

The main plane has a span of 35" with a maximum chord of 5", 13 ribs with  $\frac{3}{8}$ " camber. The front edge of plane is of spruce  $\frac{3}{8}$ " wide, streamlined, into which the wire ribs are set. It is  $\frac{1}{8}$ " thick. The remainder of the outline is of No. 18 piano wire, with ribs of No. 11, music gauge being used as the size of the wire. The tips of the main plane

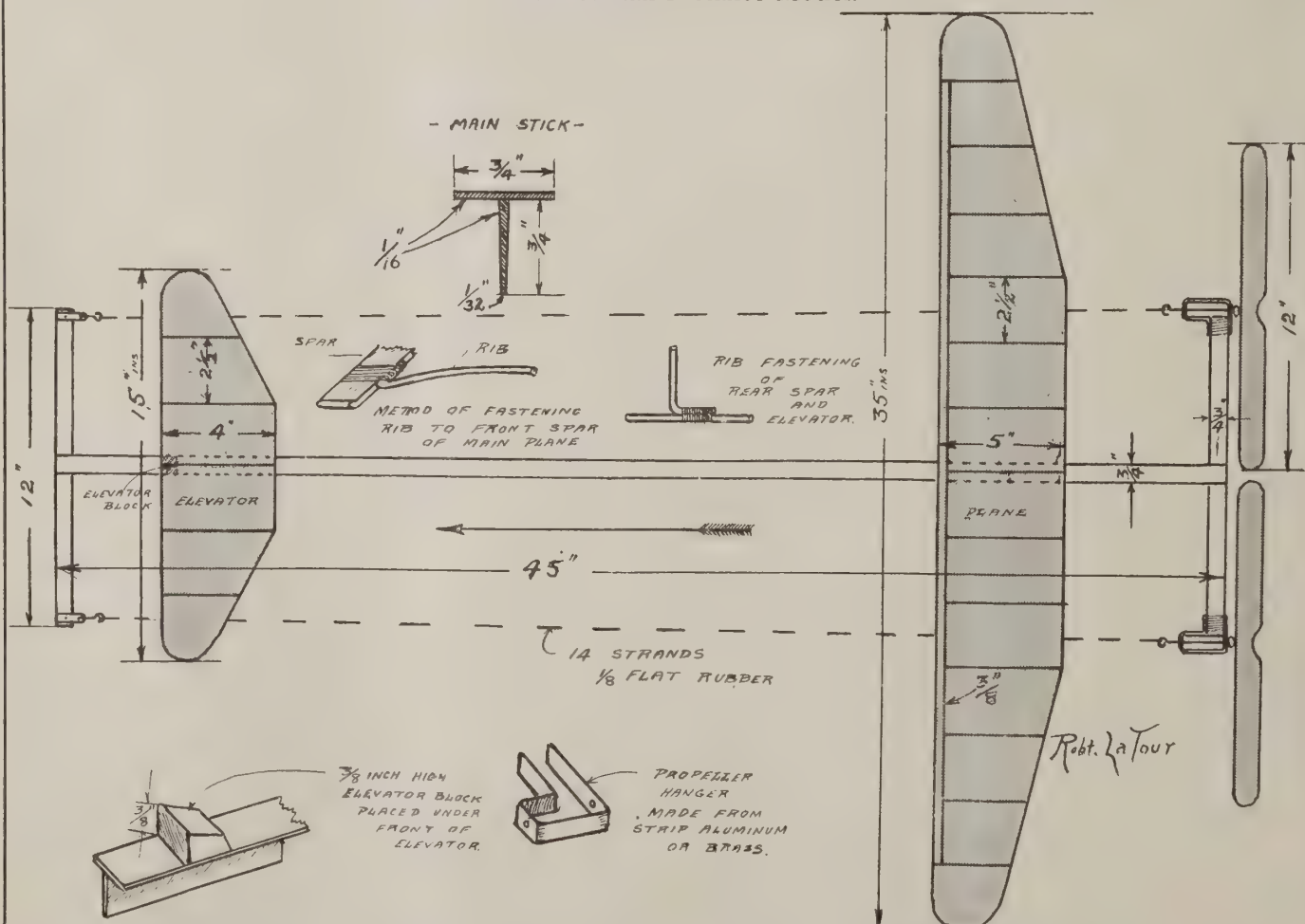


The Deltman model rising steeply at the start of a flight.

are also turned up. Frame could be built of split bamboo if preferred.

The propellers are 12" in diameter, 30" pitch, cut from blanks, which can be purchased cheap. Fourteen strands of  $\frac{1}{8}$ " flat rubber are used and about 1200 revolutions obtained. Both planes are covered with bamboo or fibre paper "doped."

### The Deltman Distance Model.



Scale working drawings of the novel Deltman model.

**Aero Science Club**

By G. A. CAVANAGH

The Buffalo Model Aero Club is now a branch of the A. S. C. This was announced at the last meeting when a request was received from that club and passed upon stating the club's desire of becoming a branch of the A. S. C. The Buffalo branch consists of a number of members, all good fliers, and which club will be represented in the coming Aero Club of America contests. Many other clubs are considering affiliation with the A. S. C. At the past meeting it was decided who would represent the club in the coming contest. The following members were selected as qualifying in the elimination contest, held August 1: Mr. Rudolph Funk, Mr. C. V. Obst, Mr. A. K. Barker and Mr. G. A. Cavanagh. The substitutes are: Mr. Stanley Lott, Mr. R. C. King, Jr.; Mr. C. W. Meyers and Mr. W. H. Hodgins.

In the elimination contest Mr. Funk scored with a record of 1,918 feet, Mr. Barker came second with 1,835 feet, and Mr. Obst third with 1,415 feet. The fourth flier had the misfortune of breaking his machine.

Everything is in readiness for the coming contest, and every effort is being made to have motion picture machines on the field during the contest.

Mr. Fenouillet has secured the use of the Holderman Wright type glider, which he hopes to have adjusted and ready for use in short. Mr. Fenouillet has a reputation of being one of the best glider flyers in the vicinity of New York City.

Mr. John Fleming, who is the kite expert of the club, is now flying his huge kites at Steeplechase Park, Coney Island, L. I.

For further particulars address the secretary, Mr. G. A. Cavanagh, 29 West Thirty-ninth street, New York City.

**Illinois Model Aero Club**

Sunday last the I. M. A. C. held the Villard preliminaries. Although the wind conditions were not perfect, the meet drew a great attendance and keen competition resulted. The members making the team were Arthur E. Nealy, Tommy Hall, Ellis Cook and Ward Pease, with Charles Arens, Louis Sweitzer, Lindsay Hittle and Wm. Weiner the substitutes. A dead calm prevailed all afternoon and entrants withheld their three official flights until late, expecting a breeze to pick up. About three-thirty Mr. Cook succeeded in getting some directional control and made the first official flight of the day. Immediately following, Mr. Hall made a 1,341-ft.

*(Continued from page 521)***Kirkbridge To Open School at Detroit**

William Kirkbridge will start an aviation school at the old Detroit Motor Boat Club shortly. He will not only instruct pupils in the flying art, but will also take passengers up for flights.

For the last four years Kirkbridge has been flying in exhibitions through the South and has just returned to Detroit. He will use a hydroaeroplane in his flights.

**Many Make Flights at Sandusky**

With the flying boat "Cedar Point" again in commission, the Cedar Point aviation line is now doing a big passenger-carrying business. Recently Aviator Benedict carried 11 passengers in one day.

W. P. Heed, Urbana, O.; P. W. Magley, Kenton, O.; Mrs. The passengers were: E. W. Loth, Philadelphia; E. H. Ott, East Cleveland, O.; Mrs. G. S. Vail, Cleveland, O.; C. W. LeForest, Cincinnati, O.; Rudolph Cruzen, Paxton, Ill.; J. B. Chesborough, Willoughby, O.; F. J. Schnide, Evanston, Ill.

**Pennsylvania State College To Conduct Tests**

It is announced that the engineering experiment department at the Pennsylvania State College will co-operate to work for the development of American aviation. Experiments will be conducted on various wing forms. Investigations along this line begun four years ago by the experiment station will be resumed by Dean Sackett of the school of engineering and his assistants. They will continue and enlarge the experimental work after the value of the collected data has been determined.

A circular railway track, a quarter mile in length, has been erected. The track carries a car operated by an arm from a central station within the circle. Overhead planes attached to the car by delicate springs are supplied with gauges. As the car speeds around the track, the operator seated on it records the readings of the gauges. From the material thus collected will be calculated the variations of power in size of planes and changes of speed.

official flight. Mr. Nealy, seeking to get the last ounce of power out of his rubber, wound up next for an official get-away, but his motor base broke in midair. Messrs. Pease and Arens came next, the former making an official flight of 1,160 ft., and the latter unluckily losing his model. About 5.30 Mr. Nealy again came out with a patched motor base, took a couple of adjustment flights and launched his model officially for a 1,560-ft. flight, the best of the day.

Wednesday and Friday the model club gave exhibitions to thousands in Grant Park. Especially did the loop-the-looping and exhibition flying draw the applause of the spectators.

Sunday the Milwaukee Model Club will compete with the home club in R. O. G.'s at Cicero Field.

**St. Louis Enthusiastic Over the National Model Aeroplane Competition**

The St. Louis Aviation Committee has accepted the invitation of the Aero Club of America to represent it as judges for St. Louis in the National Model Competition. The committee, with its usual activity, immediately secured announcement of the competition in all the local newspapers and posted notices in public places where young men and boys congregate. Considerable interest has been aroused and the prospects are good for an active participation. Now that the meet is launched, a subcommittee will be appointed to complete the organization and actually judge the contests.

**Milwaukee Model Aero Club**

By Lynn E. Davis.

The second contest for the M. M. A. C. silver trophy was held August 1. The results were as follows:

	Distance.	Duration.	Total points to date.
Erwin Eiring .....	922 ft.	72 seconds.	3654
Kenith Sedgwick.....	568 ft.	85 seconds.	2406
Gilbert Counsell.....	.....	45 seconds.	2451
Lynn Davies .....	173 ft.	20 seconds.	2420
Alfred Hayden .....	600 ft.	60 seconds.	1357

This contest is for R. O. G. machines. The third and last meet will be staged August 8.

The team which will go to Chicago on August 14-15 to meet the Illinois Model Aero Club will probably consist of the following five members: Clarence Bates, Gilbert Counsell, Kenith Sedgwick, Lynn Davies and Erwin Eiring.

**ST. LOUIS NEWS**

The dual-control military type tract which serves as a school machine to the Berry School of Aviation has met difficulty in the adequate cooling of its sixty-horse-power, six-cylinder Fernholtz motor. A larger and more efficient radiator is expected to remedy the trouble.

Two officers of a foreign government were in St. Louis on July 28th to investigate the products of the Polyplane Motor and Metal Manufacturing Co. The six-cylinder radial Eno motor was put through its paces, and various tests were made of the company's metal, Krauselium. The motor, made of Krauselium, ran continuously for six hours under full load at 1,500 revolutions per minute, and the visitors were favorably impressed. The plant of the company is running to its full capacity.

The past week saw the formation of the copartnership of Charles S. Crailie and Henry D. Harkins under the firm name of Crailie & Harkins, designing, constructing and consulting engineers.

**Christofferson To Demonstrate New Tractor**

Silas Christofferson is putting the finishing touches to his new tractor biplane, which he claims can be put together and dismantled the quickest of any biplane ever constructed.

Christofferson states that several governments, including our own, have evidenced interest in the machine, and that he will demonstrate it before United States Army aviators and representatives of the British and Russian Governments, as well as Lieut. Poorten, of the Netherlands.

The machine may be demonstrated in New York.

**Adriatic Sails with 50 Aeroplanes**

The decks of the White Star liner Adriatic were covered fore and aft with war material when she sailed for Liverpool on August 5th. This material included fifty aeroplanes in cases, and 200 motor trucks. In her holds she carried 15,500 tons of war munitions.

Last week the Arabic sailed with a shipment of 110 aeroplanes.





**Aeronitis** is a pleasant, a decidedly infectious ailment, which makes its victims "flighty," mentally and physically. At times it has a pathologic, at times merely a psychologic foundation. It already has affected thousands; it will get the rest of the world in time. Its symptoms vary in each case and each victim has a different story to tell. When you finish this column **YOU** may be infected, and may have a story all of your own. If so, your contribution will be welcomed by your fellow **AERONUTS**. Initials of contributor will be printed when requested.

#### Aviation and Astronomy

Some few days ago a news item appeared in the San Francisco *Chronicle* testifying to the fact that Art Smith had flown so high over that city that he saw a sunset at 9 P. M. This was too much for a local astronomer. It set him calculating as follows:

At 9 P. M., Pacific standard time, last Saturday the sun would have been in the zenith of the place whose latitude is 22 degrees 14 minutes, north; longitude 105 degrees, east. It would have been on the horizon for all observers on the dividing great circle of a hemisphere whose pole is located at the place just named. It is easy to show that the nearest point on this great circle from San Francisco is located at a distance of 1050 miles in a northwesterly direction; i. e., for an observer above San Francisco to have seen the sun on his horizon at that time of night, he must have been far enough above the earth for his horizon to have been extended to the distance named. A simple calculation determines this height to be 154 miles.

Some altitude record!

#### Confidence

English Mistress—"Well, Cook, if you and the other maids are at all nervous of the Zeppelins, you can have your beds removed into the basement."

Cook—"No, than you, ma'am; we have every confidence in the policeman at the gate."—*Punch* (London).

#### Don't Frighten It

Olean, N. Y., July 17.—A huge, cigar-shaped dirigible balloon, with a searchlight powerful enough to illuminate objects several miles distant, has passed above the mountains near this city for the last three nights in the direction of the new explosives factory of the *Ætna* company, at Emporium, twenty-eight miles away. Bernard Garlack, night watchman at a mountain camp of Smethport, Penn., and Olean residents vouch for the truth of this report, and two Smethport citizens have corroborated him.

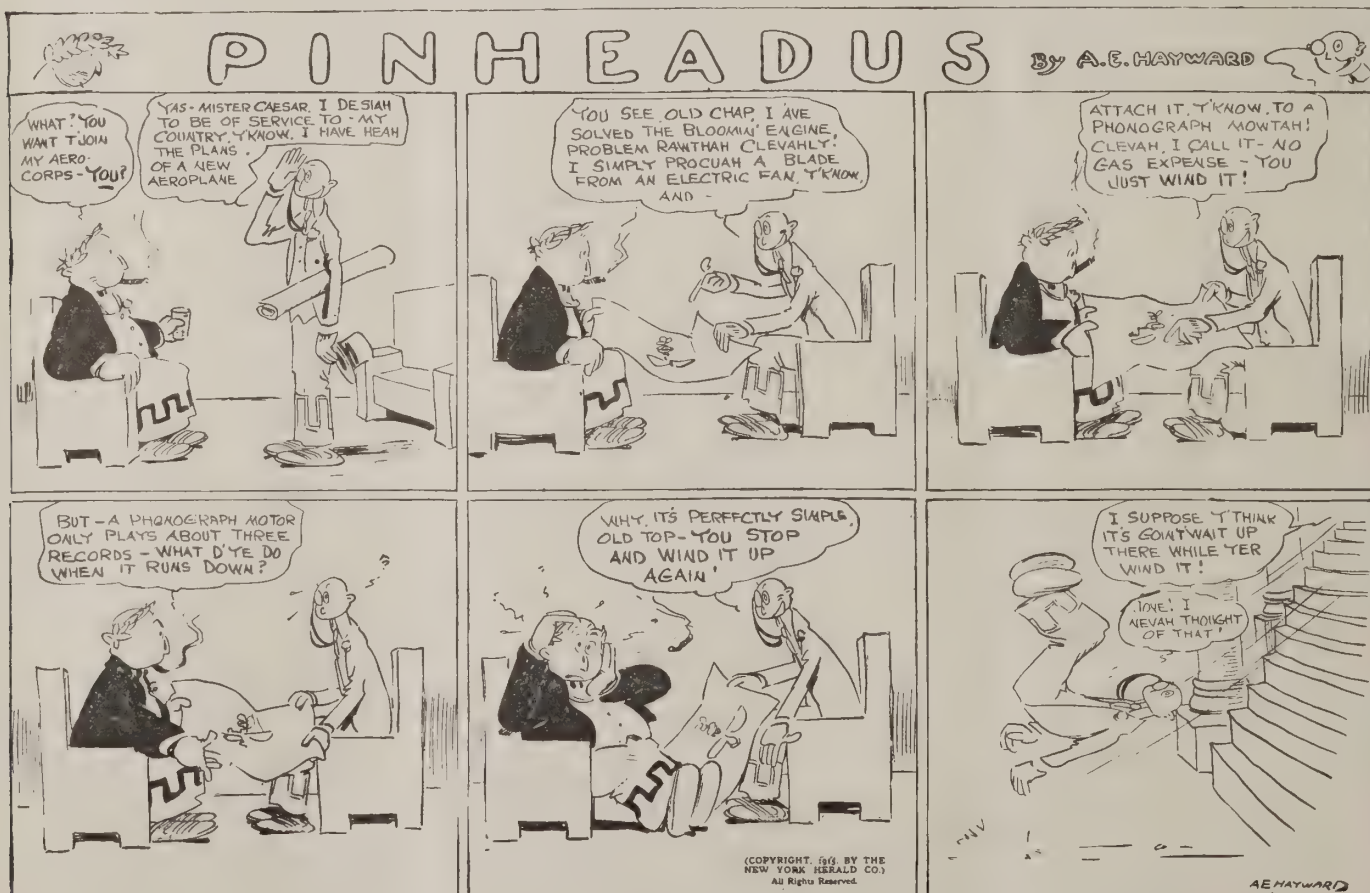
They express the opinion that the Zeppelin-like flier is owned by German sympathizers, who are secretly inspecting the munitions manufacturing plants in this section and in Northern Pennsylvania. It is thought to be housed in a deserted lumber tract in a valley south of Smethport. It has not been seen by any of the night guards at the Emporium explosive plant.—*Newspaper Report*.

Please don't frighten him away! This may be the only chance we shall have of seeing a Zeppelin.

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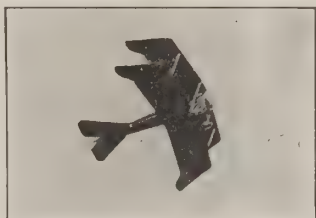
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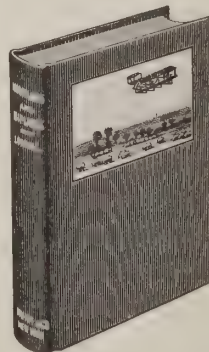
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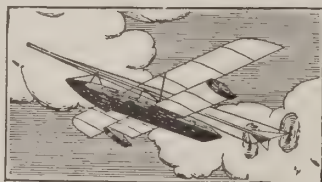
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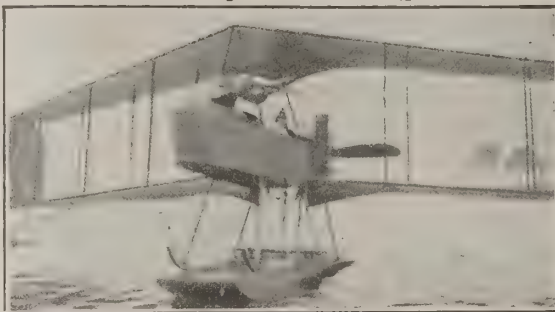


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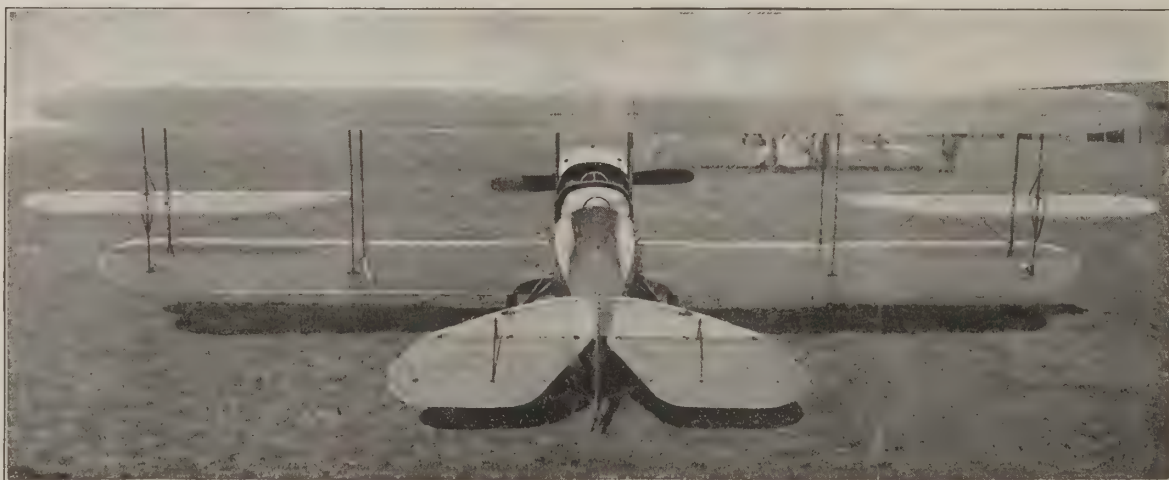
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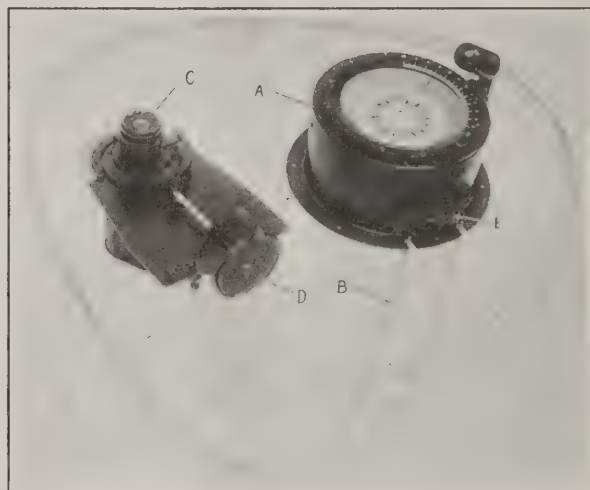
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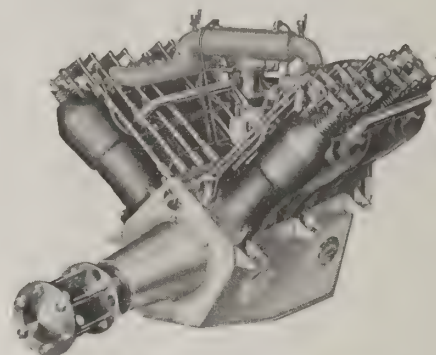
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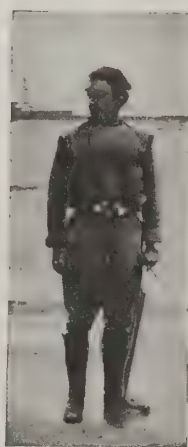
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PUBLISHED WEEKLY BY THE AERIAL AGE COMPANY, Inc., 116 West 32nd Street, New York City

Entered as Second-Class Matter, March 25, 1915, at the Post Office at New York, N. Y., under the Act of March 3, 1879

VOL. I.

NEW YORK, August 23, 1915

No. 23

### Governors' Conference To Consider Aeronautical Needs of the Militia

The governors of the states who are to hold a conference at Boston, August 24th to 26th, have been asked by the Aero Club of America to give consideration to the aeronautical needs of the militia. The following letter, sent to the governor of each state by Mr. Alan R. Hawley, president of the club, tells of the aeronautical needs of the militia, the Navy Department's failure to fulfill its promise to "loan" aeroplanes to the Naval Militia, and the prospects of starting public subscriptions in each state to relieve the present deplorable conditions. This letter was addressed to Governor Charles S. Whitman of New York:

My Dear Governor Whitman:

The Aero Club of America learns with deep regret that the Navy Department cannot fulfill the promise made several months ago to "loan" aeroplanes to the Naval Militia of the twenty-three States that have Naval Militia organizations. This is a serious matter, as it delays for at least one year the prospects of getting assistance from the Federal Government to form aviation corps for either the National Guard or Naval Militia, and to organize an air service and aeronautical reserve thereby.

At this time, when the reviews of one year of war show the important part played by aircraft; when it is shown that the Russian defeats and surprises have been due principally to lack of aeroplanes and aviators on the Russian side, while Germany employed hundreds of aeroplanes and trained aviators; and when each day brings ghastly surprises, and threats to American ideals, American interests, and American lives, emphasizing the necessity of having adequate means of defense, we must realize that having only five aeroplanes in the navy, twelve in the army, and but two in our militia, places this country in a pitiful and dangerously helpless position.

Good aeroplanes and aero motors are available in this country, and are being shipped to Europe in large numbers—600 aeroplanes having been shipped this year—and we could, no doubt, quickly obtain a large number in case of need, but we have no experienced aviators, and our army, navy and militia have had no experience in operating with aircraft. Our few naval aviators have never maneuvered with a fleet, and so do not know what ships and submarines look like from the air; and our naval commanders have never had an opportunity to use aeroplanes. Our army aviators have never had practice in operating with troops; our artillery has no aerial observers; has never practiced firing with aviators as "spotters," the majority of officers, and the rank and file have never had an opportunity of familiarizing themselves with the work of aeroplanes. The Philippine Islands, the Hawaiian Islands and the Panama Canal have no aerial protection.

The few army aeroplanes are at San Diego, Cal.; the few navy aeroplanes are at Pensacola, Fla. The East is aerially unprotected. If some "crank" should set fire to the flimsy hangars at each place, we should be utterly deprived of aeronautical equipment.

The National Guard and Naval Militia—the backbone of our defense system—have had no experience with aeroplanes, and the officers and men have never had an opportunity to become acquainted with its possibilities as a scout, and as a range-finder for big guns.

Something must immediately be done to correct these de-

plorable conditions, and we respectfully suggest that this matter of organizing aviation corps in the National Guard and Naval Militia be given consideration at the Governors' Conference, which is to be held at Boston, Mass., August 24 to 26, 1915.

Since the Aero Club of America started the movement to develop aviation corps for the militia, we have had occasion to analyze the existing conditions, and have found that the heads of the National Guard and Naval Militia are anxious to have aviation corps, but that they have no funds with which to organize the corps. The militia authorities of the States of New York, Pennsylvania and Vermont, who were supplied with aeroplanes for their maneuvers and encampments by the Aero Club of America, found that, besides affording the National Guardsmen an opportunity for familiarizing themselves with this potential instrument of warfare, the aeroplanes rendered invaluable services in creating public interest in the work of the militia. This gives another reason for their wanting aeroplanes, and they are anxious to get them.

The following letters from Adjutant General Lee S. Tillotson, head of the Vermont National Guard, and Commander G. F. Schwartz, head of the Missouri Naval Militia, give a good idea of the conditions. Adjutant General Tillotson writes:

"The camp of the First Infantry, Vermont National Guard, which closed August 11, 1915, was one of the most successful which has ever been held. Greater interest was manifested in the work of the militia by both the members and the general public than has been seen in several years. This was due, to a large extent, to the novel feature furnished by the aviator, George A. Gray, whose services were secured through the influence of your organization, and for which the State authorities are very grateful.

"Several officers and men of the militia have become very much interested in aviation, and if the necessary funds can be obtained it is probable that an aviation corps will be organized. I will be glad to receive from you a statement as to what, if any, assistance the State may expect to receive along this line from your organization."

Commander Schwartz writes:

"As Commander of the Missouri Naval Militia, I carried out instructions from the Navy Department as to organizing an aeronautical corps. I received sixteen requests and applications from flyers and mechanics of this city.

"Now, it is up to the Navy Department or some other source to provide equipment, and I personally have been waiting, thinking that the Navy Department would eventually find some way of providing it."

These letters might have been written in any State, as the conditions are the same everywhere. The need for aeroplanes is recognized, and there is the necessary interest in the militia, and there are the men willing to take up the work of forming the corps. But funds are lacking, and there are no prospects of getting assistance from either Congress or the State Legislatures for at least a year to come.

It is, of course, imperative that the interest aroused in the Militia be kept up and utilized, and the Aero Club of America will do all in its power to assist in meeting these conditions. The National Aeroplane Fund, which was instituted by the Aero Club of America for the special purpose of developing aviation corps for the National Guard and Naval Militia, may, in the next six months, grow to a size sufficiently large to enable the club to make substantial contributions toward developing aviation corps for the militia of each State.

As has already been announced, Mr. Emerson McMillin, who recently contributed \$1,000 to the fund, has offered to



add \$100 to each and every \$900 paid into the fund between August 1, 1915, and February 1, 1916, until the sum of \$500,000 is reached, which will make his contribution \$50,000. The Aero Club of America and its affiliated aero clubs will make every effort to raise the \$500,000 for which Mr. McMillin is offering such a generous inducement, and will be pleased if the Governors, at their coming conference, approve the plan to start a public subscription in each State, the proceeds in each case to go toward supplying the aeronautical needs of the militia of the State. The heads of the militia and leading newspapers of many States have expressed their willingness to co-operate in carrying out this plan, and it can be started immediately upon the approval of the Governors' Conference.

Independent of the success of this plan, however, the Aero Club of America will endeavor to increase the National Aeroplane Fund so as to provide aeroplanes and aviators to attend the maneuvers and encampments of the militia of each and every state next year. As soon as conditions will permit, a transcontinental aeroplane race and other aeroplane contests will be held, in which militia aeroplanes will represent their own states, and the work of militia aviators will thereby be popularized.

To induce officers of the National Guard and Naval Militia to take a personal interest in aeronautics, the club hereby offers a medal of distinction to be awarded to the first officer of the National Guard and Naval Militia of each state who earns the aviation pilot's certificate. The distinction of being the first officer of the National Guard or Naval Militia of a state to earn this certificate is a matter worthy of notice in the history of the Militia, and the Aero Club of America will include the names of the officers who win the distinction in the records of the development of American military aeronautics.

Whereas, it is of the utmost importance that Congress recognize at its coming session the necessity of developing aviation corps for the National Guard and Naval Militia, we respectfully urge that a resolution be adopted at the Governors' Conference asking the Congressmen and Senators of each state to support the measures which undoubtedly will be introduced in Congress and in the Senate to provide the necessary aeronautical equipment for the formation of aviation corps in the Militia.

Mr. Henry A. Wise Wood, Chairman of the Conference Committee on National Preparedness, has been appointed by the Committee to attend the Governors' Conference as representative of the following organizations: The Army League, the Navy League, the National Security League, American Legion, the Aero Club of America, American Red Cross Society, the Automobile Club of America, the American Society of Civil Engineers, the American Institute of Radio Engineers, and the American Society of Aeronautic Engineers.

Mr. Wood, being President of the American Society of Aeronautic Engineers, and Vice-President of the Aero Club of America, is well acquainted with the movement to develop aviation corps for the militia, and is authorized to discuss this matter with you in detail.

If other ways to advance this movement to develop aviation corps for the Militia occur to you, we shall thank you for advising us. Please consider us at your disposal for anything we can do to advance this movement.

Very sincerely yours,  
(Signed) ALAN R. HAWLEY, *President.*

### Because Our Navy Had But Two 'Planes to Carranza's Four? Why Not An Air Patrol at the Mexican Border?

We are under the impression that much of the trouble in Mexico is due to knowledge on the part of the Mexican chiefs of the fact that very recently our navy had only two aeroplanes in commission, while Carranza had four and Villa had a few. Our aeronautical destitution was, in fact, the object of pity and comment of the Mexican party which came to the United States some months ago. This party had reasons for being proud, when by ordering four aeroplanes at one time it could hold the distinction never held by the U. S. Navy—the largest single

order ever placed by our navy having been for three aeroplanes.

This illustrates the tragedy which is at the root of our international difficulties. We are forced to decry our helplessness so as to secure even the least betterment in our national defenses, and the knowledge of our helplessness encourages lawlessness and disregard of our national rights and interests.

Had we two scores of trained aviators along the Mexican border the Mexican outlaws would not venture within fifty miles of the border, no more than the natives ventured out to practice their lawlessness at Tripoli and Algiers when air patrols were brought into use by the Italian and French authorities. Why not have an air patrol along the Mexican border?

### A National Aeroplane Fund

(Editorial in *The Dispatch*, Pittsburg, Pa.)

The Aero Club of America announces that Emerson McMillin, of New York, a life member, has offered \$50,000 to the National Aeroplane Fund, conditional on the fund reaching \$500,000 by February 1, next. Public subscription to such a fund netted \$1,808,000 in Germany in 1913-14, and one in France \$1,222,969, these unofficial movements being largely responsible for the preparedness of these nations for aerial warfare when the war came. It is the hope of the club which has sent aviators to the National Guard maneuvers of several States this summer to interest the American people in a similar effort.

Popular confidence in our ability to find aviators and machines, if emergency arose, is contrasted with Russia's experience. Trained aviators are not made in a day, and it is deemed deplorable that this country, which gave to the world the first practical aeroplane, the first hydroplane, and the first flying boat, should lag in military preparedness for their use. One suggestion by Mr. McMillin is of interest—that besides training aviators and having efficient aeroplanes and motors available, we should have motors equipped with self-starters and mufflers. The whirring of motors is frequently mentioned in war dispatches as betraying the presence of an enemy plane. These silencing devices are said to be available, but have not been used because they added two or three per cent. to the weight. American inventiveness may be relied upon to overcome this difficulty, as well as many others, once we really set to work to develop an aerial defense organization.

### Captain Edison's Company

Edison will head Minute Men for our new defense.—News note.

Gather, men! As once before  
Comes the call to arms!  
From the Nation's capital  
Sound strange new alarms!

This, the land you honor, love,  
Needs your urgent aid,  
Prime not muskets for the fray—  
Whet no trusty blade.

But your Captain's orders heed,  
When the word he'll say,  
His campaign plan he'll evolve,  
In his wizard way.

When his wits he sets to work,  
Foes had better fear!  
They'll see some uncanny sights,  
Some strange sounds will hear!

Ensigns Bell and Lake and Wright,  
Maxim, Tesla, Ford,  
To his help bring those ideas  
In your brains long stored.

Nineteen fifteen Minute Men,  
Quick! Your genius lend!  
Our preparedness, our best hopes,  
Must on you depend!

—ELLA A. FANNING, in *Times*.



# THE NEWS OF THE WEEK

## Wright Flying Boat Flies Over Hudson

On August 16th Aviator Rhinehart, instructor at the Wright School, at Dayton, and Mr. A. B. Gaines made three trips above the Hudson from the hangar of the Hudson-Wright Company, at 131st Street. He used one of the Loening-Wright short hulled machines, pending the assembling of the new Wright long hulled flying boat, belonging to the Hudson-Wright Company, which was damaged some time ago, but which has now been completely repaired.

Mr. Rhinehart is accompanied by several of the recent graduates of the Wright School, including amongst them, G. Moro, the Japanese graduate, who is assisting in the flights.

## Ensign Harris Being Trained to Pilot New Military Flying Boat

Ensign Lee H. Harris, of the Fifth Division Engineers, has been detailed to aviation duty for the First Battalion Naval Militia of New York, and is now receiving instruction at the Buffalo Curtiss School, to qualify as pilot for the flying boat which Mr. Glenn H. Curtiss donated to the Naval Militia. Robert T. Kahl has been detailed to train for mechanic. As soon as Ensign Harris has received his pilot's license he will return to New York City, where he will take up the work of training pilots and men for the aviation corps which will be formed. The boat will be sent to New York as soon as Harris has completed his course.

## Aero Club of America Offers Use of America III for Business Men's Military Training Camp

To complete the equipment of the Business Men's Military Training Camp, and to give the "Rookies" an opportunity to see a balloon operated as it would be in war conditions, the Aero Club of America has offered to General Wood to send its balloon, the America III, to Plattsburg, with three of the club's balloon pilots—Messrs. Alan R. Hawley, President of the club; Jerome Kingsbury, and A. Leo Stevens, to operate it.

Balloons have been used extensively in the European war, when aeroplanes were not available, as "lookouts" at fortified places, and for observing the effect of artillery fire and correcting its mistakes by signals. As we have less than twenty aeroplanes for both the army and navy, aeroplanes in this country would be even scarcer than they have been in any of the warring nations, so it is important that we develop ballooning and allow our first line of defense to become familiar with the possibilities of using balloons for military purposes.

Mr. Stevens is just from Tobyhanna, Pa., where he operated a captive balloon, which was used for range-finding

and observing artillery fire in connection with the field artillery operations conducted there. He used a small captive balloon, which ascended to a height of from 1,500 to 2,000 feet, and was controlled by a windlass controlled by a gasoline motor.

The America III is a large balloon of 80,000 cubic feet gas capacity, and can lift six people. It was presented to the Aero Club of America by Mr. Rodman Wanamaker.

Two aeroplanes, a Gallaudet biplane equipped with a 100-horsepower rotary motor, and a Schmitt monoplane equipped with a 80-horsepower motor, have been sent to Plattsburg and have been there for several days. Their operation has not been possible so far on account of the lack of a clear field for starting and landing. While, under war conditions, aeroplanes rise from and alight upon all sorts of fields, and Aviator P. C. Millman, who is to pilot both machines, could probably fly them out of the small field and back again, it is not thought advisable to take unnecessary chances.

Messrs. Raynal C. Bolling and Philip Carroll, both members of the Aero Club of America, arranged to have the balloon sent to Plattsburg. The club supplied aeroplanes and aviators for the maneuvers and encampments of the National Guards of New York, Vermont, and Pennsylvania, that being part of the plan to develop aviation corps for the militia, which, constituting as it does, the backbone of our system of defense, should be thoroughly familiar with the possibilities of aerial tactics, and should be equipped with aeroplanes.

## Sperry Flies from New York to Amityville—Will Try for Curtiss Marine Trophy

On Saturday, August 14, Lawrence Sperry, in his Curtiss flying boat, flew from the Brooklyn Navy Yard to Amityville.

At 5:43 p. m. he left the Navy Yard for his new hangar at Amityville. He covered the thirty-one miles in thirty-two minutes, reaching the hangar at 6:15 o'clock. He went from the Navy Yard by way of Bay Ridge and the Rockaways, traveling most of the distance over water.

A few minutes after he stepped out of the machine, Sperry talked with a reporter. He said no homeward bound commuter enjoyed his trip to the country more than he did. He said he purposely flew low so he could see the people. At Coney Island thousands were attracted by the hum of his motor and he was near enough to see their upturned faces.

Elmer A. Sperry, father of Lawrence Sperry, the inventor of the Sperry gyroscopic stabilizer, which won the \$10,000 prize in France, knew nothing of his son's intention to fly home until after his son had arrived safely after a record breaking trip. Mr. Sperry said his object in building the new hangar at Amityville is to make some experiments which are more important than anything else he has previously attempted.

New Model R Curtiss 160 h.p. military tractor biplane, for speed and weight carrying, being built for the British Government. In the first flight of this machine Raymond V. Morris and two passengers rose to a height of 8,200 feet. The ascent was made in 27 minutes and the descent in 5½ minutes. The motor is equipped with Rome-Turney Radiators.







P. C. Millman who is flying the Gallaudet Military Tractor at the Business Men's Camp at Plattsburg.

In the morning Sperry took A. E. Wallace, a moving picture photographer, for a flight about the bay, but met with a mishap, which damaged one of his elevators.

The Sperry flying boat is now fully equipped for night flying, with red and green lights on the wings and a searchlight on the bow.

At the first favorable opportunity Lawrence Sperry will try for the \$5,000 Curtiss Marine trophy and its accompanying prize of \$1,000 in cash.

#### Concerning the New Sperry-Equipped Giant 450 H.P. Italian Fighting Biplanes

The following letter from Mortimer F. Bates, engineer and aviator for the Sperry Gyroscope Company, who is now in Italy installing Sperry stabilizers on a number of the Italian aeroplanes, gives some interesting data on the new giant Italian biplanes:

EDITOR AERIAL AGE:

I have at hand a copy of the July 5th issue of AERIAL AGE, and wish to make some slight correction concerning Italy's aeroplane destroyer, and add some further information that may be of interest.

There are three of these machines under construction. A fourth one is completed, but has not undergone any trials as yet. Each is equipped with three Isotta Fraschini six cylinder 150 h.p. motors in the manner your article states. The general dimensions are: Overall span, 85 feet; overall length, 50 feet; height, 14 feet; chord of wings, 10 feet.

The wings are "staggered" forward. The lower plane is

nearly flat on its under surface, while the upper plant has a camber of about four inches. There is no dihedral and ailerons are only fitted to the upper plane. No overhang of upper plane. The landing chassis is a combination of the H. Farman type, with two wheels placed forward under the central nacelle. Thus there are six wheels with 935 x 135 m. m. tires. The machine is arranged to seat four in the central nacelle—a pilot and assistant, side by side, with dual controls and forward of them an observer and mechanic.

There appears to be ample fuel capacity for eight hours' flying, but no provision is made for carrying a "cargo of bombs." This seems to be a strange lack of foresight.

I expect to have some first hand information shortly as to how this machine handles in the air, as it is to be equipped with a Sperry Stabilizer.

Yours truly,

MORTIMER F. BATES,

Installation Engineer and Aviator for the Sperry Gyroscope Company.

#### Astor Hydro Soon to be Delivered

Vincent Astor is preparing to take possession of his new flying boat. The machine, a product of the Burgess Co. at Marblehead, has been put through more tests than any other machine turned out at the plants.

This particular machine has been constructed at rather a high cost. It has many novel features, including a specially built boat hull which will house the pilot and passengers and has a space for oil and fuel supplies as well as for food. The boat hull permits the use of the machine on the surface of the water the same as a motor boat and a speed of 55 miles an hour can be attained in the water.

There are really two compartments in the boat, one forward for the pilot and one amidships for two passengers. These seats for pilot and passengers are heavily upholstered and have springs beneath them. There are two controls, so that one of the passengers can operate the machine if necessary. The control is the most simple of any now in use. The boat is so constructed that the occupants will be thoroughly protected from wind and spray.

A novelty is the method of entering the boat. The doors are at the extreme bow and give direct entrance to the forward and rear compartments.

It is equipped with a Curtiss motor which will develop from 100 to 110 horsepower, giving the machine a speed of from 65 to 70 miles an hour in the air. The machine is considered foolproof. Clifford Webster and W. Starling Burgess have made flights in some of the same type with their hands off the control levers for many minutes.

It is asserted that the machine possesses considerable inherent stability, and tests have proved this to be a fact. One flight of ten minutes has been made in a Burgess-Dunne with the levers locked in one position. All gusts of wind and changes were taken care of by the machine itself without the aid of the aviator.

Experts at the Burgess factory have experimented for many months with this type of aeroplane, and by making many changes have succeeded at last in getting a type of aeroplane that has attracted much attention. The Astor machine is nearer the type of flying boat than hydro-aeroplane, special attention having been given to the boat part. Two celluloid windows in the bow give a clear view ahead and at the same time shelter the occupants from the terrific wind caused by the high speed.

The motor is the Curtiss OXX, located in the rear. A muffler allows the noise to be cut down considerably.



The Stephens' Flying Boat (Jack McGee, pilot) equipped with 100 h.p. Ashmushen Motor, at Oakland Beach, R. I.

A floating hangar of distinctive design, the first of its kind, has been evolved by the Burgess company for housing the aeroplane. This is built upon a pontoon scow with a freeboard of from four to five feet at the bow and one at the stern. Room is provided for a complete machine shop for repairs.

Running lengthwise under the center of the roof of the hangar's superstructure is a strong steel girder used as a track for a trolley. The girder extends out over the water at the stern and the trolley is furnished with a chain for hooking into ringbolts on the top of the aeroplane. So carefully has the mechanism of raising the boat been worked out by W. Starling Burgess that one man can lift the aeroplane into the hangar by means of a hand winch.

#### Lightning Hits Curtiss Hangar

During the storm on Sunday a bolt of lightning hit the Curtiss hangar at the foot of Porter avenue, Buffalo, but outside of splintering one corner of it, no damage was done. The lightning grounded through the steel guy wires, narrowly missing the school machine as it was coming in. Fortunately there was no damage done to the machine.

#### Activity at Curtiss Boat School

At the present time there are eleven students in the flying boat school at Buffalo, and from the great amount of interest shown in aviation it looks as though the Curtiss Co. would in the new type R machine, which is as steady as a clock have to put in another school, with another training school boat. There is also some talk of starting a land-flying school in Buffalo.

#### Morris Flies Daily at Buffalo

During the last few days Buffalo has been treated to a great deal of spectacular land flying. Raymond V. Morris has flown in circles all over the city almost daily, at times flying steadily for hours at an altitude of between six thousand and seven thousand feet. Much of this flying has been done and develops tremendous speed.

#### Miss Stinson Again Loops Over Chicago

Chicago again had another air exhibition on August 6th when Miss Katherine Stinson, in her new tractor biplane, made two flights from Grant Park, on each of which she looped the loop a dozen times. One of the flights was made at 3 o'clock and the other at 5.15.

Emil Laird, the 19-year-old member of the Illinois Model Aero Club, made a flight in a biplane of his own design and construction.



L. A. Vilas, who has done excellent work for the forest fire service of Wisconsin, and the youngest member of the family.

#### Three Graduate from Wright School

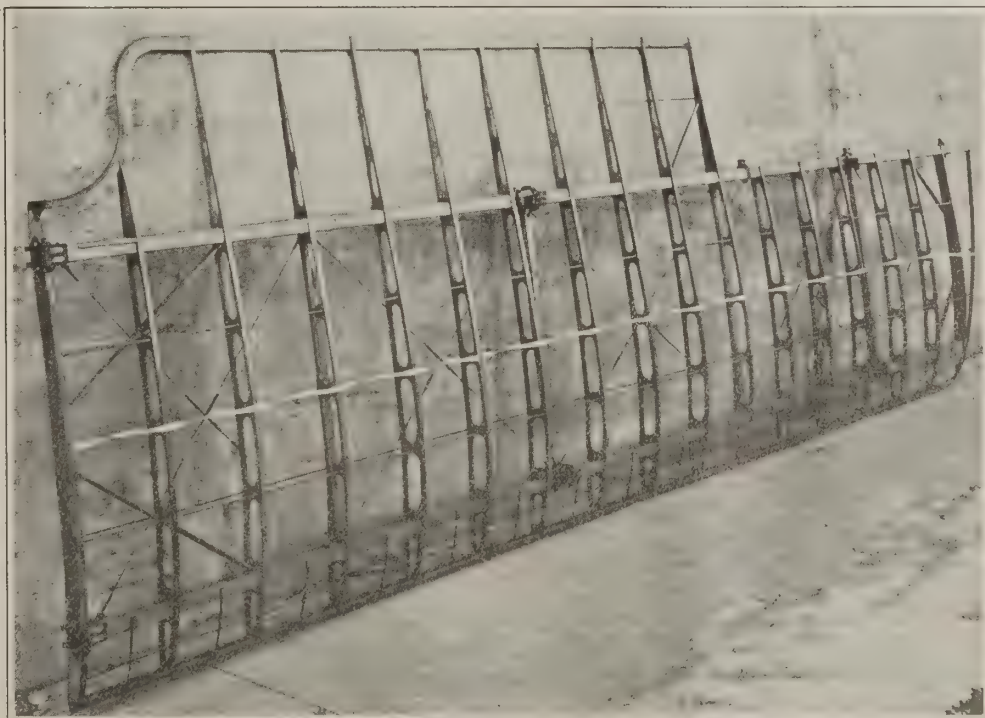
Final trial flights have been made and recommendations gone forward for three aviators, whose work at Wright field was concluded Saturday morning, August 14th. W. H. Briggs, an American, finished his work Friday night, in the presence of Dr. P. M. Crume, observer for the *Aero Club of America*.

Saturday morning, at an early hour, Dr. Crume observed the flights of Goroku Moro, a Japanese, and also that of W. D. Evans, a Canadian. The latter rose to a height of 600 feet.

Evans will leave for England at once and enlist in the aeroplane corps for service in the war. Moro has come to New York and later intends going back to Japan, but will return to America within the next year, purchase a Wright aeroplane and do exhibition work in this country.

Howard Rinehart, instructor at the Wright school, left Saturday for New York, where he has been testing out a Wright flying boat. In Rinehart's absence, R. M. Wright will have charge of the Wright school. Miss Rose Dougan, of Richmond, Ind., who has been faithful in her attendance and work at the Wright field, will make her trial flight later on.

Lower left wing frame of Simplex 2-seater Military Biplane. Note separate system of struts and cross-wires, graduated with the loads, to take all compression (drift and inertia) stresses. Fabric sewed on to wing frame.





## THE NEW CURTISS V-2 ENGINE

### Eight Cylinder 160 Horsepower

By NEIL MacCOULL, M. E.

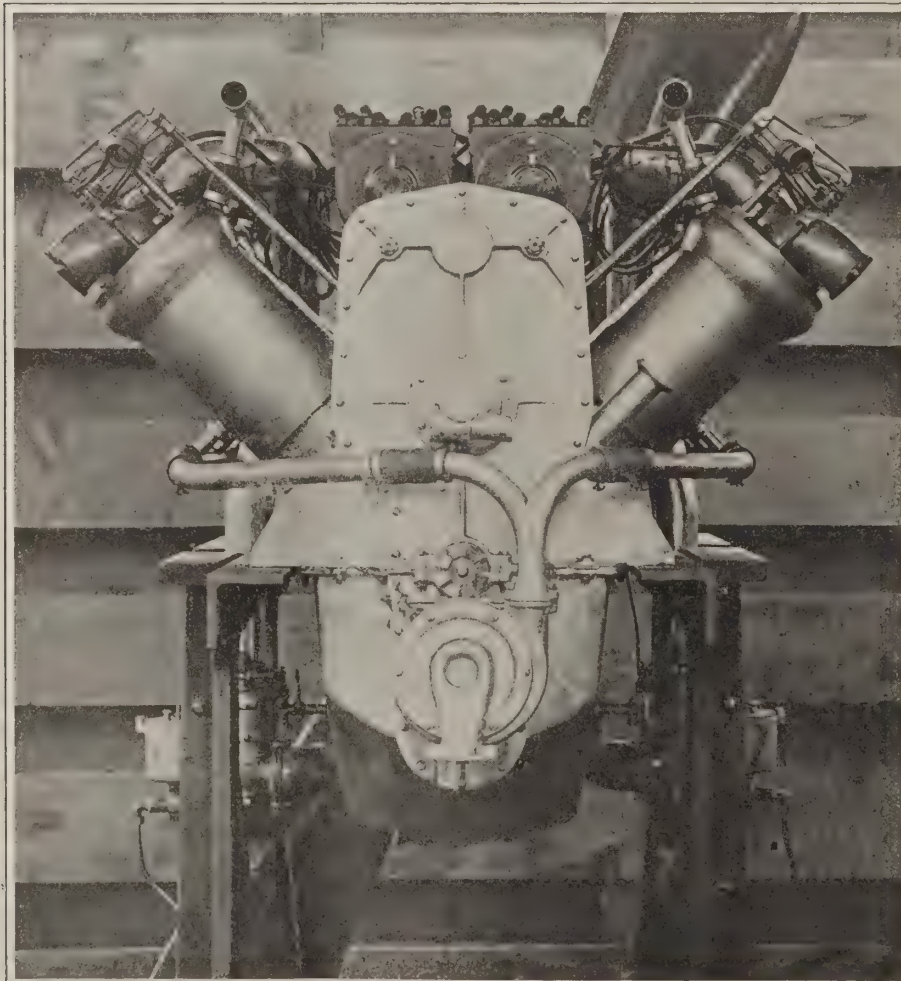
In order to supply the high power required by the flying boats and many of the military tractors being supplied to the warring nations of Europe by the Curtiss Aeroplane Company, they have developed their type V-2 engine. This is in reality an outgrowth of the engine which was designed for the Rodman Wanamaker flier, the "America," which was planned to fly across the Atlantic. It has eight cylinders arranged in the usual 90° V, one group of cylinders being staggered a little behind the other, so that the connecting rods of opposite cylinders may be placed side by side on the same crank pin. This seems to be universal practice on V-type aeroplane engines, though it is interesting to note that the largest and most successful manufacturer of eight-cylinder automobile engines is having unquestioned success with the forked type of rod.

In common with all Curtiss engines there is a bearing between each throw of the crankshaft, and the propeller is direct connected. The rated power of 160 H.P. is delivered at a speed of 1,300 r.p.m. This moderate speed eliminates most of the difficulties encountered in the design of high-speed engines such as the Sunbeam, though, of course, this at the price of greater bulk and weight.

The cylinders are of nickel steel, making an excellent wearing surface with the aluminum alloy pistons. The cylinders are  $\frac{7}{8}$  inch thick and integral with their heads which are the same thickness. The heads are considerably reinforced by a  $\frac{1}{8}$ -inch plate above the head, leaving a  $\frac{1}{2}$ -inch water space between, and which is connected to the head by bosses welded between them where the valves and spark plug go

through, and where the valve-rocker support is secured. The top of the thin spun water-jacket is brazed to this upper plate and its lower end to the cylinder. The enlargement of the cylinder at the combustion chamber, which allows the use of large valves, requires a bulge in this jacket which takes up a little of the difference of expansion between it and the cylinder without throwing a direct stress on the brazed extremities. Each cylinder is secured to the crank case by twelve studs passing through a flange at its lower end. This is a considerable departure from usual Curtiss practice, as all other engines made by this company have had the cylinders secured by long studs passing through lugs in the heads of the cylinders, as in the "Type V" engine, or holding spider plates over the head as on the "OX."

The valve arrangement shows another decided change, for they are now arranged in line, parallel to the crankshaft, making it possible to operate all valves by rockers of the same size. It will be remembered that the type V engine had four valves to each cylinder, but this new arrangement saves considerable weight and a few inches in width, and the four valves were not absolutely necessary for an engine running at 1,300 r.p.m. The springs closing the intake valves are helical as usual, but the exhaust springs are what might be called "rat-trap" springs for want of a better name. This type of spring is well known to those familiar with the French Salmson engine, where they are used for the same reason as these are: to keep the spring proper away from the hot, unjacketed exhaust pipe, which would quickly ruin the usual type of spring.



Gear-case end of the V-2 160-h.p. Curtiss aeroplane engine, showing the two magnetos, the tachometer drive just below them, the clutch for the starting crank, and the water pump. The simplicity of the valve mechanism should be noted, as compared with other Curtiss engines. This eight-cylinder engine has a bore and stroke of 5 by 7 inches.



Two Zenith carburetors are used, one for each row of cylinders. They are now placed on each side of the crank-case, the long unjacketed intake pipe being led up between the second and third cylinders, which is a considerable improvement. The throttles are synchronized by being linked to a tubular shaft passing through the sump casting.

Ignition is provided by two four-cylinder magnetos, one for each set of cylinders. It will thus be seen that each set of cylinders is entirely independent of the other except for the crankshaft. Magneto or carburetor trouble is not likely to occur with both sets at once, and if one set should fail the engine will still be able to limp along on about half its normal power.

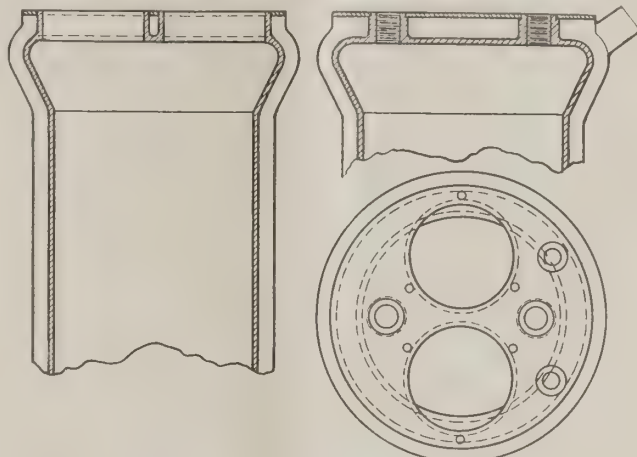
There is another advantage in the use of two magnetos aside from the fact that it is very difficult to secure eight-cylinder magnetos at present on account of the war. This is that each of the two magnetos runs at one-half the speed of a similar eight-cylinder magneto, with the result that the wear and tear on the breaker, and other parts which wear, is but half as much as usual. This is another way of saying that the reliability of this important part of the engine is greatly increased.

Two-point ignition is used, the spark plugs being located near the middle of the cylinder head, which is the best place for them.

Water circulation is provided by a centrifugal pump geared to the crank-shaft at its rear end. It has two outlets, each one supplying one set of cylinders. The water leaves the cylinders at their highest points, ensuring an excellent circulation. The piping is broken at several points by rubber hose connections, so as to reduce the harmful action of vibration.

The gear case at the rear provides a connection for a tachometer and just below it is a clutch for a starting crank.

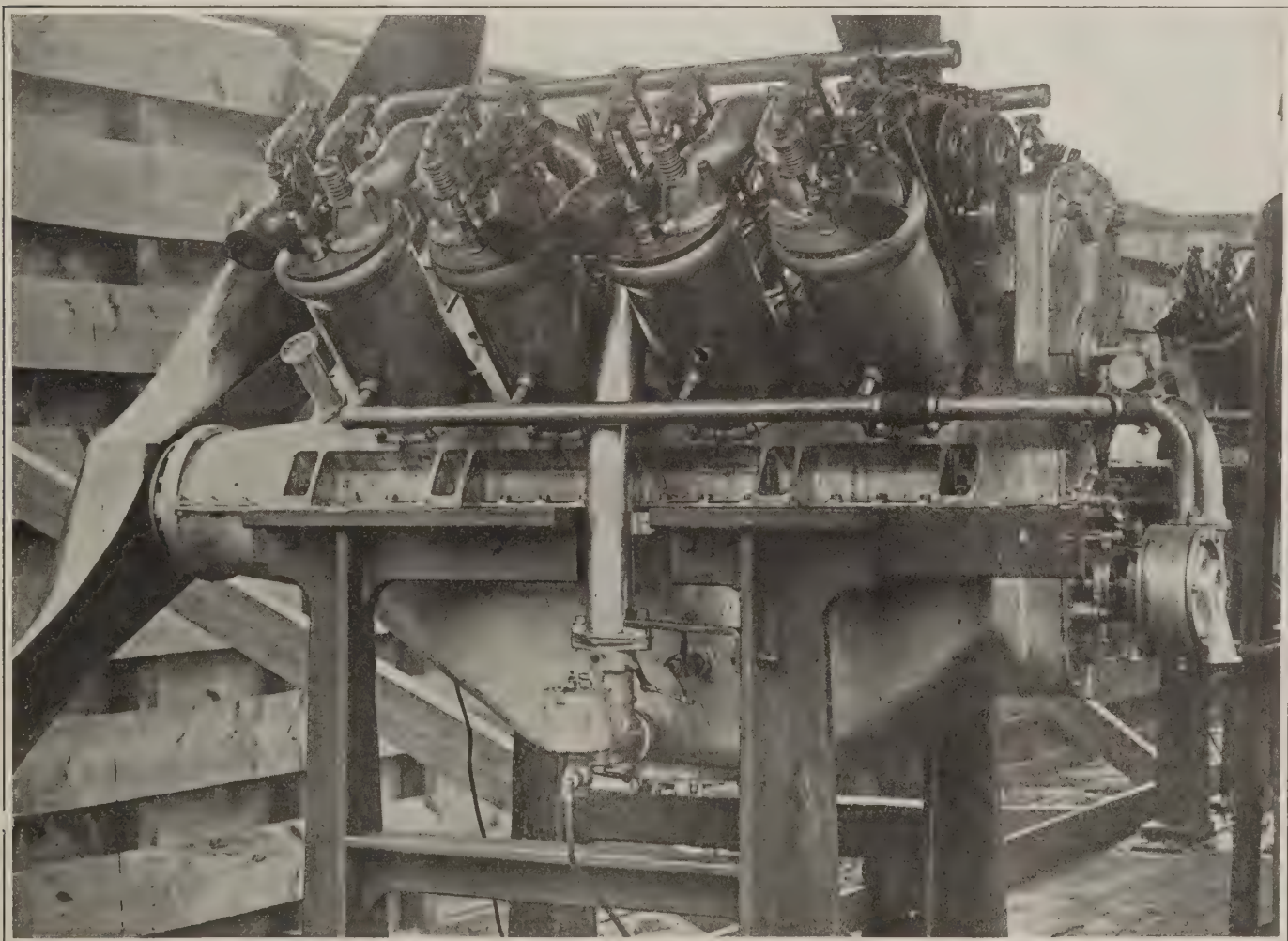
The engine has five-inch diameter cylinders and a stroke of seven inches, and, as before mentioned, develops about 160 H.P. at 1,300 r.p.m., though it will develop more power at higher speeds. Higher speeds, however, are of but little



Section drawings of one of the steel cylinders of the type V-2 Curtiss engine, showing the general details of construction.

value, as even 1,300 r.p.m. is too fast for the highest efficiency of a ten-foot propeller.

The total engine weight, without water or radiator, is 565 lbs., and allowing 140 lbs. for these, the weight per horsepower is 4.4 lbs. The width is a little over thirty-five inches, exclusive of mufflers.



Side view of the type V-2 Curtiss engine.



# SPECIFICATIONS FOR AEROPLANE MOTORS ISSUED BY THE NAVY DEPARTMENT

The office of Naval Aeronautics, Department of the Navy, has just issued the following general specifications for motors for aeroplanes on which the bids will be opened at 10 A. M., September 14:

## GENERAL SPECIFICATIONS FOR MOTORS FOR AEROPLANES.

*Bids will be considered on motors differing in detail from those specified if complete specifications and drawings are submitted and if, in the opinion of the Government, the motors will give equal service to those specified.*

All parts to be of the best material and workmanship. Engine to deliver not less than 100 brake horsepower for Item 1; 120 brake horsepower for Item 2; 140 brake horsepower for Item 3; 160 brake horsepower for Item 4; with muffler attached. Items 1, 2, and 3 will drive propellers not greater than 8 feet in diameter. They shall be well balanced and produce no excessive vibration at any power. To be capable of being throttled down to 20 per cent. of the revolutions per minute for full power. The weight of the engine complete, with ignition system, magnetos, carburetors, pumps, radiator, cooling water and propeller, not to exceed 5 pounds per brake horsepower. Engine to be fitted with some type of compression release as a means of stopping it. To be fitted with a practical means of starting from pilot's seat when installed in an aeroplane. All moving parts not lubricated by a splash or forced lubrication system to be readily accessible for inspection, adjustment and oiling. Ready means shall be provided for checking and making adjustment to the timing of the engine. All parts to be machined all over where possible. Fillets to be of ample radius to insure strength. To have an accurate and positive lubricating system which will insure a uniform consumption of lubricating oil proportional to the speed of the engine. All parts subject to corrosion to be protected from the effects of salt water. To be fitted with an approved attachment for obtaining the revolutions per minute. To be provided with means for preventing fire in case the engine is turned upside down. A hand throttle lever and connections to carburetor to be provided that can be applied for convenient operation by the pilot. This lever to be designed with a positive means of retaining it at the throttle adjustment desired by the pilot. All bolts and screws without any exception to be provided with an approved positive means for preventing backing out due to vibration. No soft solder to be used in any part of the power plant.

## Acceptance tests—

1. To determine power revolution curve, and fuel and lubricating oil economy.
2. To be run for five hours at full power, using one supply of lubricating oil.
3. Immediately upon completion of second test, to run a similar full-power run for five hours.
4. One motor to be selected at random from lot to make eight separate and distinct runs in the following manner: Engine to be started by the use of the starting gear; to be run for the first five minutes at 95 per cent. of full power while inclined at an angle of 15° to represent climbing; then to be run for 22 minutes at loads varying between 75 per cent. and 95 per cent. of full power; then to be throttled down to 20 per cent. of full power revolutions per minute, and the engine to be tipped 30° to simulate gliding, and to run in this position for two minutes; then to be leveled and run at full power for one minute. Engine to be then stopped, and after five minutes a similar test to be repeated, and this shall be continued until eight separate runs have been made.
5. Motor to be run at full power for one-half hour under conditions approximating operations in the aeroplane in a heavy rainstorm.

NOTE.—No adjustments or alterations shall be made during any of the tests or intermissions. The failure to complete any test in a satisfactory manner shall require that that set of tests be made again.

The engine shall be capsized while running to demonstrate the means provided to prevent a fire.

During all tests an accurate record shall be kept of the following:

- Total number of revolutions for each test.
- Revolutions per minute for each test.
- Lubricating-oil consumption for each test.
- Gasoline consumption for each test.
- A record of thrusts for tests 2 and 3.

At the successful completion of these tests the engines shall be broken down and inspected. No parts shall show undue wear or deterioration, and the weights and balance of the separate parts shall be in conformity with the specifications.

## SPECIFICATIONS FOR PARTS.

**Lower Crank Case.**—To have an oil capacity for five hours running at full power, or fitted with an efficient automatic device to keep constant supply of oil at pump suction. To be fitted with a sight gauge to show the height of the lubricating oil. Oil system to have a pressure gauge capable of being mounted on an instrument board, and means to turn this system on and off at will. To be fitted with drain plugs. If possible, to be capable of removing from engine with engine installed on engine beds. To be fitted to prevent oil leaks at joints and connections. All fillets to be of ample radius to insure strength.

**Upper Crank Case.**—To be fitted with an efficient system of relieving pressure in the crank case. Wherever possible where webs are fitted which can not be machined they should be of uniform thickness. Wherever attachments are made to the upper crank case they should be sufficiently reinforced to insure strength. All fillets to be of ample radius to insure strength.

**Cylinders.**—To be fitted to take two spark plugs. To be cooled to prevent excessive heating of valves. Cylinders to be counterbored to prevent piston wearing a shoulder at either end of the stroke. They shall be secured to the crank case so as to prevent oil leaking. To be fitted with an efficient detachable muffling system. To be attached to crank case with sufficient safety factors to insure against cylinders blowing off. Cylinder holding-down bolts to be subjected to a uniform load on all members. Cylinders to be machined on the outside as well as inside. Spark plugs to be accessible and removable without removing any engine parts. Spark-plug points to extend into the combustion chamber. Any pockets in the head of the cylinder where burnt gas might collect to be avoided. Water jacket, if used, to be of a non-corrosive metal.

**Pistons.**—To be balanced and finished so that homologous parts shall be of uniform thickness. Sufficient thickness shall remain after the piston ring grooves have been cut to insure ample strength. Means shall be taken to prevent an excess of oil entering the combustion space. Wrist-pin bearings to be brushed with bronze. Means to be provided to prevent wrist pin or bushings from touching the cylinder walls. All pistons to be of the same weight and to balance at the same point.

**Piston Rings.**—To be of the leak-proof type, made in two parts, and not less than  $\frac{1}{4}$  inch wide.

**Connecting Rods and Bearings.**—They shall be machined all over and balanced with liners (I-beam cross section preferred), crank-pin bearing cap and crank-pin bolts and nuts in place. All connecting rods to be of the same weight and to balance at the same point. Crank-pin bolt heads to be countersunk into connecting rod to prevent turning. Ends of wrist pin to be beveled.

**Crank Shaft and Main Bearings.**—Crank shaft to be carefully balanced and to be machined all over. If the crank shaft is made with a flange, to which it is the intention to secure the propeller, this flange shall be at least  $\frac{1}{2}$  inch thick. Special attention should be given to the strength of the crank webs.

**Cam Shaft.**—To be machined all over and balanced. Cams to be case-hardened to prevent pounding out. To be fitted with some means to decrease the amount of wear and friction on the cams and on the end of the push rods.

**Push Rods, Valve Gear, Rocker Arms, Etc.**—To be machined all over. To have an accurate and positive means of opening and closing valves. Clearance between valve stems and actuating mechanism of both intake and exhaust valves to be capable of adjustment. All parts to have sufficient strength factor to insure against distortion, such as bending of rocker arms and push rods, if employed. Rocker arms to be machined all over.

**Intake Manifold and Carburetor.**—To be smoothly finished on the inside. No bolts or lugs to pass through or extend into the inside of the intake manifold. Sharp turns or bends to be avoided, and the distance from carburetor to any intake port to be approximately the same. Means to be provided for heating the mixture after entering the intake manifold. The use of two carburetors is preferred. The



carburetor to be so located as to provide for the minimum amount of vibration (*i. e.*, as near the line of the crank shaft as possible). The face of cylinder to which the intake manifold is secured to correspond exactly to the cross section of the air-manifold flange. Means shall be provided for making accurate and permanent adjustments to the carburetor, and means to prevent these adjustments changing due to vibration. Means for adjustments from pilot's seat shall be provided to care for changes in altitude.

**Magnetos.**—Two magnetos to be used, either one capable of developing 90 per cent. of full power. To be waterproof. Positive means shall be provided for securing magneto leads to the distributor.

Leads to spark plugs to be waterproof.  
Angle of advance to be controlled from pilot's seat.  
**Circulating Pump.**—To have a capacity sufficient to cool the engine when running at full power in air of 72° F.

A quotation (separate) on a list of selected spares to be included in the proposal.

All bids must contain the bidder's guaranty in regard to replacement of defective parts.

The following data and plans, in duplicate, must be submitted with all bids:

(a) Motor particulars: Make, model, cycle, bore and stroke, piston displacement, actual horsepower, speed, number and arrangement of cylinders, cooling, lubrication, types of bearings, types of valves, method of starting, make of spark plug.

Carburetor: Make, number.  
Magneto: Make, number.  
Radiator: Make, number, disposition.  
Propeller: Make, diameter, efficiency.

(b) Material of the following parts: Cylinders, pistons, jackets, crank shaft, cam shaft, connecting rods, valves, all bearings, crank case.

(c) A weight schedule of the following: Power plant complete: Motor, propeller, transmission, radiator, cooling water, piping, etc.

(d) General arrangement plans: Plan, profile and elevation. Curves of brake horsepower and revolutions per minute, also oil and gas consumption in pounds per brake horsepower per hour at full power (certified).

(e) Photographs of motor (five views—top, both sides, both ends).

(f) A price list covering replacements for one year after delivery of the motor.

**Alternate Bids.**—The contractor will meet all detail requirements of the original specifications, except in so far as they are modified by his bid.

Proposals must state distinctly whether the motors proposed are (1) as called for by the specifications, (2) as by modified specifications, (3) as by substitute specifications.

Each of the duplicate proposals must also be accompanied by full and detailed descriptions and drawings or illustrations showing the details of the motors it is proposed to furnish.

The name of the maker of the motors, the net weight, and the space occupied must be stated. Failure to comply with this requirement will render the bid liable to rejection.

If the motors proposed vary in any part from the specifications, special mention must be made of such points apart from the general description. When variations are not stated clearly and in detail, the contractor will be required to meet all details of the original specifications when the motors are inspected for final acceptance.

Inspection to be made at place of manufacture unless otherwise directed by the Bureau of Steam Engineering. Prompt inspection can be arranged if bidders will state on the blank lines below the name of the manufacturer as well as the place where the material will be manufactured, giving the exact address:

.....  
.....

*When the bidder and the manufacturer are the same, the exact address of the manufacturing establishment should be given, and not the office address.*

If this information can not be furnished in his bid, the contractor must, within five days after receipt of notice of award, furnish the Bureau of Steam Engineering with the foregoing information.

All handling of material necessary for purposes of inspection shall be performed and all test specimens necessary for the determination of the qualities of material used shall be prepared and tested at the expense of the contractor.

If contract is sublet, the contractor and subcontractor shall

furnish the inspector representing the bureau concerned in their district quadruplicate copies of all orders placed with manufacturers for materials, stating when possible the purpose of each item ordered and the specifications for the same. In all cases these orders shall contain the number of the original contract of which these constitute suborders.

In connection with the inspection of the material, if incorrect information is given, thereby causing one or more useless trips by the inspectors, the Government reserves the right to charge the expense of such useless trips to the contractor, and further inspection at the mills may be denied the contractor, at the option of the bureau.

*The special attention of bidders is invited to the following conditions:*

In accordance with the requirements of the naval appropriation act approved June 30, 1914, every bidder under this class, to receive consideration for his bid, must agree, if called upon to do so, to furnish the affidavit given below from a responsible member of the firm bidding or officer of the corporation. In case the bid is submitted by an agent or representative of the manufacturer, this affidavit must be furnished by the bidder and also a separate affidavit by the manufacturer whose product the bidder proposes to furnish; and in the case of a corporation a certified copy of the record of the action of the board of directors, showing the appointment of the officer making the affidavit, shall be appended.

AFFIDAVIT.

....., being duly sworn, deposes and says:

That he is the..... of..... company, as evidenced by the accompanying certified copy of the record of the action of the board of directors, and as such it is his duty to know and he does know and is thoroughly familiar with the business arrangements and relations of said company; that he has carefully examined and is thoroughly familiar with the following provisions of the naval appropriation act approved June 30, 1914:

"That no part of any sum herein appropriated shall be expended for the purchase of structural steel, ship plates, armor, armament, or machinery from any persons, firms, or corporations who have combined or conspired to monopolize the interstate or foreign commerce or trade of the United States or the commerce or trade between the States and any Territory or the District of Columbia in any of the articles aforesaid;" that said company is not engaged in any such combination, agreement, conspiracy, or understanding as is prohibited by the above-quoted portion of said act; and that said company agrees to furnish whatever additional information the Navy Department may require to satisfy itself as to the status of the said company with respect to any combination, agreement, conspiracy, or understanding of the kind contemplated by the said act.

.....  
Sworn to and subscribed before me this.... day of.....

Notary Public.

....hereby agree to furnish the above affidavit or affidavits if call upon to do so by the Government.

I, we

.....  
Name of bidder.

*The name of the bidder must be inserted in the above blank space. Failure to comply with this requirement will render the bid informal.*

The contract awarded under this class will also contain the following provision:

This contract having been awarded, conformably to restrictive provisions in the naval appropriation act of June 30, 1914, upon the express understanding that the party of the first part has not combined or conspired to monopolize the interstate or foreign commerce or trade of the United States or the commerce or trade between the States and any Territory or the District of Columbia in structural steel, ship plates, armor, armament, or machinery, and the..... of said company having furnished the Secretary of the Navy with an affidavit to this effect, it is hereby further covenanted and agreed, and this contract is upon the express condition, that in case it be ascertained at any time after the signing hereof that false representations were made in said affidavit with respect to the requirements referred to above of said statute, this contract may be annulled in whole or in part by the Secretary of the Navy at his discretion.



### Aviator Luckey's Flights Create Great Interest at Pennsylvania Camp

We called attention last week to the vast amount of interest which Aviator George A. Gray had stimulated in the maneuvers at Camp Whitman by his flying and bomb-dropping. This interest has been duplicated by Aviator William S. Luckey at the Pennsylvania National Guard encampment at Indiana. The *Pittsburg Dispatch* states that the feature of the annual encampment of the Second Brigade, N. G. P., under the command of Gen. A. J. Logan, at Camp Col. F. I. Rutledge was the bomb-dropping attack by Aviator W. S. Luckey on a machine gun company of the Third U. S. Infantry, under command of Lieut. W. Loughborough.

"Descending in a spiral form from a height of 3,500 feet to a height of 500 feet," it continues, "above the United States army machine gun company, Aviator Luckey dropped small paper bags containing one pound of flour on the machine gun company."

"The daring descent was made directly over the machine gun company, so the men operating the machine guns could not train their guns on the aviator. The exhibition electrified the 15,000 spectators who came here today to observe the guardsmen."

"Aviator Luckey drove his Curtiss biplane up in the air just as the machine gun company had completed their drill. Driving his machine about a mile from the parade grounds, he turned the nose of his biplane upwards and in a spiral movement he soon had the biplane 3,500 feet above the earth."

"Turning his air craft toward the parade grounds, Aviator Luckey drove his biplane at a furious pace toward the machine gun company. Just above the machine gun company he headed his machine toward the earth, and in spiral movement came down rapidly, and when 500 feet above the machine gun company he began to drop the improvised bombs on the machine gun company. When the bombs struck near and amid the gun company, a white cloud of dust arose."

"This is the first time in the history of the National Guard of Pennsylvania that a demonstration of an aerial attack on a machine gun company has ever been given and the maneuver was watched with great interest by the United States Army officers here to instruct the organizations of the Second Brigade. There was a high wind blowing across the parade grounds and as Aviator Luckey drove his aircraft to the dizzy height the biplane could be observed buffeting in the air currents."

"Aviator Luckey, when observed through field glasses, did not seem concerned about the buffeting of his machine, and when he reached the desired height he headed toward the space above the machine gun men and began his spiral descent."

"When the attack was completed he drove his aircraft a short distance from the parade grounds and returned and settled to the earth like a huge bird. He was given a great ovation when he climbed out of his machine."

### Must Not Fly Over Canada

A warning to aviators of Minnesota to cease flying over the international boundary line into Canada was recently issued by Governor Hammond.

Several times since the opening of the European war aviators cruising along the border districts have crossed the line despite statements of Canadian officials last fall that the practice would not be tolerated.

Governor Hammond's attention was called to the matter last week in a letter from Secretary Lansing. Ambassador Sir Cecil Spring-Rice informed Secretary Lansing that a Canadian Order in Council was adopted September 17, 1914, setting aside prohibited areas over which aeroplanes could not fly.

In future aviators flying these aeroplanes will be in danger of gunfire by Canadian soldiers, it was stated.

Governor Whitman has also received a letter from the British Ambassador, Sir Cecil Spring-Rice, calling attention to the fact that American aviators were flying over the international boundary and that he feared this practice might give rise to regrettable incidents, in view of the fact that Canada was in a state of war. The letter stated that a similar communication had been sent to the Governors of all the border States.

### Record in Aeroplane Construction at Curtiss Buffalo Plant

What probably stands as a world's record in aeroplane construction occurred Monday, August 9th, in the Churchill street plant of the Curtiss Aeroplane Co., Buffalo.

In an effort to determine exactly what length of time is required to assemble a complete machine ready for flight, a model JN-3 tractor biplane, 90 horsepower type, was completely assembled in the elapsed time of two hours and fifty-five minutes. This included the building up of the wing

panels, doping, cutting cables, and, in fact, the entire operation of building an aeroplane. This feat was witnessed by British officers and by Lieut. W. M. McIlvain, U. S. M. C.

This machine was immediately crated and shipped along with others of the same type, so that no additional work was necessary. The usual six coats of dope were placed on the fuselage and wings and other details, such as lining up the motor and wing panels, were given the usual attention. The motor, of course, was not built in this length of time.

This demonstration gives some idea of the splendid organization and co-operation of the various departments in the Curtiss factory, and also demonstrates their facilities for building aeroplanes.

We would commend this news item to the careful attention of some of our authorities who seem still to be under the hallucination that we have not the facilities in this country for the rapid production of aeroplanes.

### Military Aviation News

The First Aero Squadron has completely packed its equipment and will leave San Diego for Fort Sill, Oklahoma, at the end of this week.

During the past week Lieutenant Kilner in Signal Corps Aeroplane No. 39, and Lieutenant Gorrell in Signal Corps Aeroplane No. 38, made five cross country flights, flying on different days to Coronado Heights, to the Tia Juana River, to Pacific Beach, to Delmar and to Cardiff.

Lieutenant Colonel Samuel Reber, the Officer in Charge of United States Army aeronautics, after a tour of inspection of this section of the United States, departed to continue his journey up the west coast. He is due back in Washington about August 1.

Lieutenant Sumner Waite, 5th Infantry, joined the Signal Corps Aviation School July 18.

Lieutenant Bert M. Atkinson, 15th Infantry, has been ordered to the Signal Corps Aviation School as an aviation student.

Many of the midshipmen from the United States Naval Academy, during their stay in San Diego, visited the Signal Corps Aviation School and witnessed a number of flights.

On August 7, 1915, Mr. Oscar A. Brindley, civilian instructor at the Signal Corps Aviation School, made a flight over a baseball field whereon was being played a game in the interests of charity. He dropped a baseball to which were attached many colored ribbons in order to start the game.

Lieutenants Walter W. Vautsmeier, Coast Artillery Corps, and Dana Palmer, Third United States Infantry, have been relieved from duty with the Aviation Section of the Signal Corps.

Some new buildings are being constructed at the Signal Corps Aviation School, in order to extend the scope of the work carried on there.

Twenty Congressmen, comprising the Rivers and Harbors Committee of the House of Representatives, visited the Signal Corps Aviation School on August 9, 1915, and showed great interest in the work carried on at the school. Congressman Treadway, of Massachusetts, was given a ride in the Curtiss flying boat by Mr. Wildman.

### What the Canadian Curtiss Flying Boat School is Doing for the Royal Navy

Toronto, Canada, has become a city of aviation "fans." Every afternoon the shores of Hanlan's Point, Toronto Island, are packed with people (who even come across the lake from Niagara to "see the aeroplanes") gazing at the boats of the Curtiss Aviation School rushing through the waters or soaring far above the big lake steamers as they pass through the Eastern and Western Gaps to Lake Ontario. Those who cross the lagoon to the Sandbar, on which the hangar is situated, are forbidden to approach near or to enter the hangar unless the bearer of a pass, but that does not deter them from pressing as close to its huge iron sides as possible to look at the big Russian "K" boat, which is standing under a tent just outside; and a continuous procession of small water craft floats before its open front.

Inside the hangar is a scene of ceaseless activity. The classes are about to begin, and in and about the four small houses which are built inside the hangar—the office, stock-room, clothing room and gasoline room—thirty young men (each one either in the throes of growing a moustache or the proud possessor of a full-fledged one, for a British officer must wear a moustache; a private be clean-shaven) are bustling about, preparing for their respective instructors.

There are three boats at present in use at the camp, the "Canada," Pilot T. S. Macauley; the "Maple Leaf," Pilot J. Guy Gilpatric, and the "Betty V," Pilot Vernon. Each pilot is assigned ten pupils at one time and each pupil is numbered; thus if it is No. 3's turn and he is not there No. 4 takes his



turn and No. 3 goes to the end of the day's list. In this way not a moment is lost and every pupil must be in waiting on the runway ready to take his place in the boat when his turn comes.

The flying day is based on four hours' actual work in the air, and in order that pilot and pupil shall know exactly the period of each lesson, the time is taken when a boat leaves the water at the start and returns to the water at the end of a lesson. A duplicate slip of this time is given each pupil. The four-hour-a-day record was broken soon after Pilot Gilpatric joined the Canadian Curtiss forces, however.

If the wind on Toronto Bay is too strong the boats are flown over the narrow Sandbar and lessons go on uninterrupted above the waters of Lake Ontario. In this way very few hours are lost in any day. When the school day is finished it is required that the last pupils draw their respective craft out of the water, wipe off and cover the motor, wipe off the hull, and see that everything is in readiness for the first lesson the next morning. If some of the schools near New York would pattern after the strictly business-like methods of the Canadian Curtiss School it is safe to say that there would be less friction and more satisfaction than is now the rule. True, these pupils in Canada are young officers who are to go out with the third and fourth contingents, and they are taking up flying not to make money,

but for the business of war. They are all fine fellows, most of them sons of the oldest and wealthiest families in the Dominion, business men, professional men, and newspaper men, and one and all are facing their "duty" bravely. When one remembers that many of the young men had *never even seen* an aeroplane before they enrolled in the Curtiss School it is of great interest to learn from a despatch from the *Montreal Star* that "when the first twenty graduates of the Toronto flying schools reached England a few days ago they were accepted unqualifiedly as well-trained pilots" by the Royal Flying Corps. The school only opened in May and the graduates reached England after about four weeks' instruction on two types of machines!

After finishing at the flying boat school a pupil goes to Long Branch to the land machine school, which has already been described in the AERIAL AGE.

The great Canadian Exhibition, to which people come from all parts of the Dominion and the States, has arranged a war spectacle for "Aviation Day," the early part of September, in which three land machines will try to repel an attack from the lake front by three flying boats. The six pilots who are to engage in the skirmish are already planning a most realistic encounter, and one which will open the eyes and arouse the enthusiasm of Jack Canuck to an extent never before seen in Canada.

## TEST OF WING RIBS

MADE AT THE HEINRICH AEROPLANE FACTORY

Three tests were made of the ribs shown in the illustrations.

In each case the principal dimensions of the ribs were the same. They were built up on short sections of spar, and tested by means of a concentrated load at the center. A concentrated load was used because of the difficulties in the way of keeping the load evenly distributed.

This method will give a very good result because it has been established that a beam is twice as strong under an evenly distributed load as under a concentrated load. The dimensions in each case were  $32\frac{1}{2}$  in. between the spars,  $27\frac{1}{16}$  in. depth of front spar,  $21\frac{1}{16}$  in. depth of rear spar and  $3\frac{3}{8}$  in. total depth of rib at the center.

The straps were of whitewood,  $3\frac{1}{16} \times 3\frac{3}{4}$  in. The web of No. 1 was of  $\frac{3}{16}$  in. whitewood not laminated. The webs of Nos. 2 and 3 were  $\frac{5}{32}$  in. mahogany veneer.

No. 1 was tested on June 9th. In this rib there were 5 lightening holes in the web, and the material left between these holes were 2 in. at the front spar, where there was only  $\frac{1}{2}$  in. At 95 pounds the first sign of rupture showed in the shape of a split at this point. The tendency of the top slide on the bottom had created a longitudinal shearing force, on the neutral axis, and the material left to resist this was too little. At 119 pounds there were pronounced signs of failure. The straps had pulled away from one side of the spar and from the web fully  $\frac{1}{8}$  in. Rupture finally occurred at  $127\frac{1}{2}$  lbs. The failure was gradual and consisted of a splitting of the web between each lightening hole, and a transverse break of the web at the center. In examining this specimen after the test it was discovered that the workman had driven a brad at the center of each lightening hole, and it was at the brad at the center lightening hole that the transverse break occurred. Rib No. 2 was tested June 11. This rib was constructed with a laminated web and care was taken that no brads were driven opposite lightening holes. When the load had been applied and had reached 140 pounds, the deflection was found to be  $\frac{5}{16}$  in. The load was then released and the rib sprang back  $\frac{3}{16}$  in. The load was again applied and at 50 pounds the deflection was  $\frac{5}{32}$  in., at 75 pounds it was  $\frac{11}{64}$  in., at 100

pounds it was  $\frac{13}{64}$  in., at 125 pounds it was  $\frac{1}{4}$  in., at 150 pounds it was  $\frac{11}{64}$  in., and at 175 pounds it was  $\frac{5}{16}$  in. to start, but the rib continued to bend more and more, the straps pulling away from the web and from the spars. It finally came to rest and the load was increased to 180 pounds. The pulling away of the straps continued until they suddenly pulled entirely away. This failure was not due to a rupture of the wood fibres, but was due to the fastenings (brads and glue) pulling away. There was not a break anywhere in the wood except on the opposite side of the spar, where the web was damaged in the collapse.

Rib No. 3 was built of the same materials, but the web was fitted inside the flanges of the spar and wood screws were used to fasten the straps to the spar. Before testing the camber at 21 in. from the leading edge (chord 60 in.) was  $\frac{113}{32}$  in. At 50 pounds the deflection was  $\frac{1}{16}$  in., at 75 pounds it was  $\frac{3}{32}$  in., at 100 pounds it was  $\frac{5}{32}$  in., at 125 pounds it was  $\frac{3}{16}$  in., at 150 pounds it was  $\frac{1}{4}$  in., at 175 pounds it was  $\frac{5}{16}$  in. At this point it was noticed that the rib had a slight bend sideways, but it is not certain that this did not exist before the test. There were no other signs of rupture, whatever.

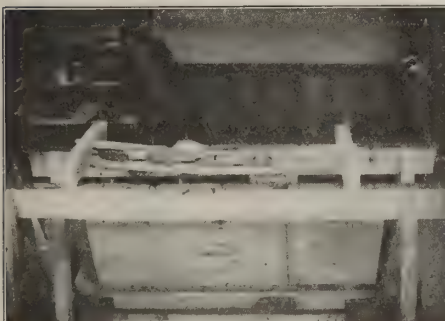
At 180 pounds the deflection was  $\frac{11}{32}$  in., and at 185 pounds the rib broke very suddenly and cleanly at the center. This break could not be attributed to any faults of design or workmanship, and must be taken as the true strength of the rib. This load of 185 pounds was concentrated at the center, and is one-half the distributed load which it will carry, or the distributed load required to cause failure would be 370 pounds on the section between the spars alone. The normal loading on this section is  $17\frac{1}{2}$  pounds, so this gives a factor of safety of 21.1. The conclusions to be taken from these tests are:

1st. When an unlaminated web is used from  $2\frac{1}{2}$  to 3 in. should be left between lightening holes.

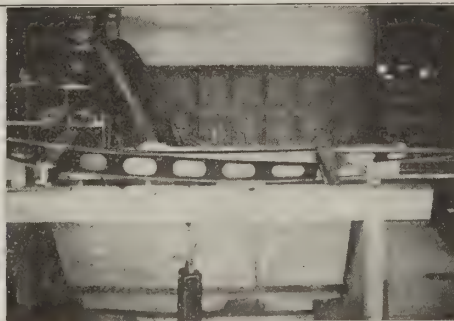
2nd. A laminated web is better.

3rd. Brads should not be driven opposite lightening holes.

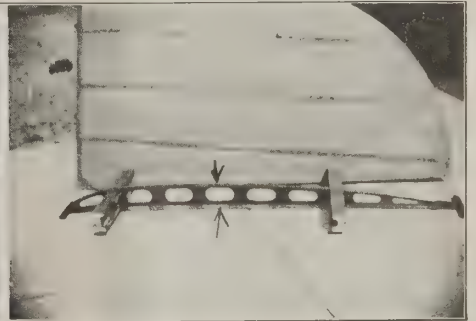
4th. The web should fit between the flanges of the spar, or small wood screws should be used to fasten the straps to the spars.



No. 1.



No. 2.



No. 3.





# FOREIGN NEWS

Edited by L. d'Orcy



## AUSTRIA.

According to an official note issued at Vienna an Austrian seaplane successfully bombarded the coast defenses of Venice on August 17th.

Bombs were dropped on four of the forts and all of the shells excepting one dropped inside the fortifications. In spite of the heavy fire by Italian warships and forts the Austrian seaplane reached its base in safety.

In its flight from Venice the Austrian plane was pursued by five hostile airmen. Two were forced to land by machine gunfire and two abandoned the pursuit after a long chase. The fifth followed the seaplane close to the Austrian base, when he turned back.

## FRANCE.

A flotilla of Franco-British aeroplanes dropped twenty-five bombs on Strasbourg, Alsace, on August 3. The extent of the damage caused by the aeroplanes could not be ascertained.

On August 9th a fleet of thirty-four French aeroplanes, convoyed by a number of armed scouts, attacked the station and factories of Sorrebruck, northeast of Metz. Owing to the unfavorable atmospheric conditions only 28 aeroplanes reached their goal and dropped 164 bombs of various calibres, which caused several fires. The armed scouts meanwhile were keeping away the German machines, which were trying to cut off the squadron from its base.

The German report says that two of the aeroplanes who raided Sorrebruck were shot down.

On August 9th a squadron of French aeroplanes attacked Zweibrucken and Saint-Ingbert. About twenty bombs were dropped on the former place, causing material damage. At St. Ingbert eight persons were killed and two wounded.

## GERMANY.

The official statement from German General Headquarters, issued on August 1, records the following aerial operations:

Great aerial activity was continued yesterday. The British flying ground at St. Pol, near Dunkirk, was attacked, thirty bombs being dropped.

The German aerodrome near Douai was unsuccessfully bombarded by a hostile air squadron. Here one of our battle aeroplanes shot down an enemy aeroplane.

On the French flying ground near Nancy early this morning 103 bombs were dropped. Eighteen hits were observed on the tents. The enemy machines, which ascended for defense, could not prevent the attack.

Six German aeroplanes attacked fifteen French machines over Chateau-Salins (Lorraine), and during the forty-five minutes of fighting several of the hostile machines were forced to land. When enemy reinforcements came up our airmen retreated without loss.

To the north of Saargemund a French aeroplane was forced to descend, the occupants being captured.

The French report simply says that "German aeroplanes dropped on the plateau of Maxeville, near Nancy, about twenty bombs, which caused neither losses nor damage."

## GREAT BRITAIN.

The English east coast has again been raided by a squadron of German airships. The first attack occurred on the night of August 9-10, when five Zeppelins attacked, according to the German official statement, fortified places on the Thames and the London Docks, torpedo boats at a point near Harwich and important establishments on the Humber.

The statement issued by the British Admiralty says that the enemy airships dropped a number of incendiary bombs which caused some fires and that fourteen non-combatants were killed by explosive bombs. One Zeppelin was seriously damaged by the gunfire of the land defenses and fell into the sea upon her return journey off Ostend. She was towed into port by the Germans, but was ultimately destroyed by the bombs launched by an aeroplane squadron that had rushed to the scene from Dunkirk.

The second attack took place on August 12th, when military establishments at Harwick were bombed, according to a statement by the German Admiralty, with success.

## ITALY.

Lieutenant Gabriele d'Annunzio, authorized by his military superiors, has consented to give some particulars of his flight over Trieste in an aeroplane driven by Naval Commander Miraglia d'Annunzio. The latter, who has perfected himself as an airman since he entered the army, received his first lessons from the American aviator, Curtiss, with whom he flew for the first time at Brescia some eight years ago.

The poet said the martyr city of Trieste, "Sister Queen of the Adriatic with Venice," looked more imposing than ever in her desolation, seen from a height of over 3,000 feet. Their first thought, despite the attacks of the enemy, who immediately fired from all quarters on the aeroplane, was to throw into the city little sandbags surmounted by Italian flags, containing d'Annunzio's message to the people of Trieste.

## RUSSIA.

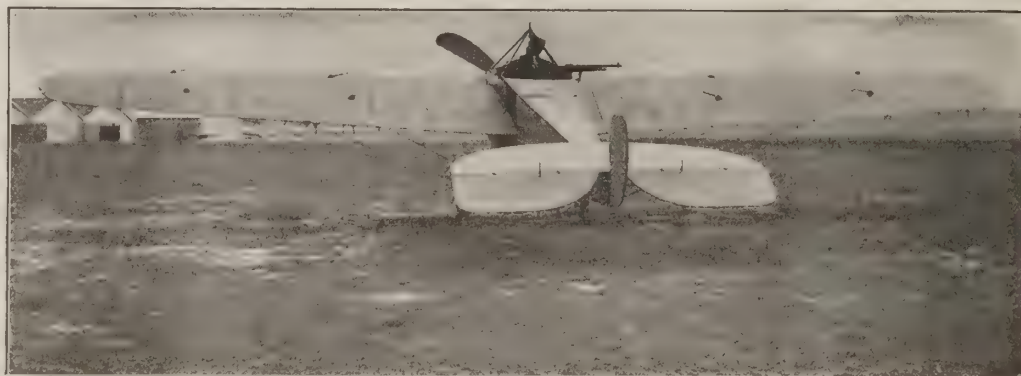
Russian seaplanes have again scored a notable success in the defense of the Baltic coast against the attack of a powerful German fleet.

The Petrograd official report says:

"A German fleet of nine battleships and twelve cruisers, with a large number of torpedo boat destroyers, persistently attacked the entrance to the Gulf of Riga on August 8th, but everywhere were repulsed.

"The Gulf of Riga would allow the Germans to give powerful aid to their army now occupying the western coast of the gulf. The enemy made three attacks with the object of breaking the mine barrier protected by our fleet.

"Our seaplanes and warships co-operated to repel the enemy. The Germans did not succeed in passing our defenses. Three of his ships were damaged by mines near Dirben. None of our ships was lost."



A Nieuport "avion de chasse" of the French Army armed with an automatic gun. These machines accompany the squadrons of bombing aeroplanes, which they protect against enemy fighting machines.

Courtesy of Flying.



# MODEL NEWS

Edited by WALTER H. PHIPPS



## CLUBS

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Columbia Bldg., 8th and Locust Streets, St. Louis, Mo.  
MODEL AERO CLUB OF OXFORD  
Oxford, Pa.

### Aero Science Club of America

Mr. A. Leo Stevens, one of America's leading aeronauts, gave a very interesting talk to the members of the Aero Science Club at the last meeting. Mr. Stevens spoke about his early adventures as an aeronaut and the manner in which he made his first ascent. The talk was as much instructive as it was interesting and was greatly appreciated by the members present. After the talk Mr. Stevens stated his intention of donating a silver cup to be competed for at the Motion Picture Benefit to be held at the Brighton Beach Race Track, Saturday, August 21st. The event is to be an open one, but the judges will be selected from the club. The contests will commence at 2 p.m. sharp and will be for duration from the land. This is one of the many cups donated by Mr. Stevens to assist the cause of model flying in America. The cup will be engraved according to the wishes of the winner. Motion picture machines will be on hand to snap the event. Between 12 m. and 1.30 p.m. Mr. Durant will be at the gate with badges for the members.

On August 22d the members will be on hand to compete in the first contest of the series, to be held under the auspices of the Aero Club of America. In view of these two contests being held in succession, there is to be no meeting of the club on August 21st. In view of Mr. Barker's intention to fly for one of the club's branches Mr. Frank Broomfield has been selected to fill the vacancy. The judges have been selected to officiate at the contest and everything is in readiness for the event, which is expected to be one of the biggest of model contests ever held in the country. Many members of the club are expected to be on hand. Some very interesting photographs were sent by Mr. Gleason of Dallas, Texas, of his model, which he claims has made good flights. The pictures were reviewed with interest by the members. Mr. Gleason is an active flier and recently was enrolled as a member.

For further particulars address the secretary, 29 West Thirty-ninth street.

### Illinois Model Aero Club Notes

Sunday, August 8th, the elimination for the five members to represent this club against the Milwaukee Club were held. The competition was held August 14th and 15th for the R. O. G. honors of the Middle West.

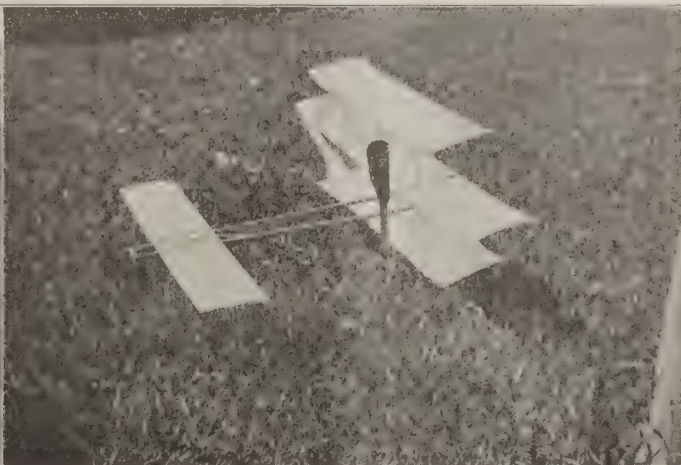
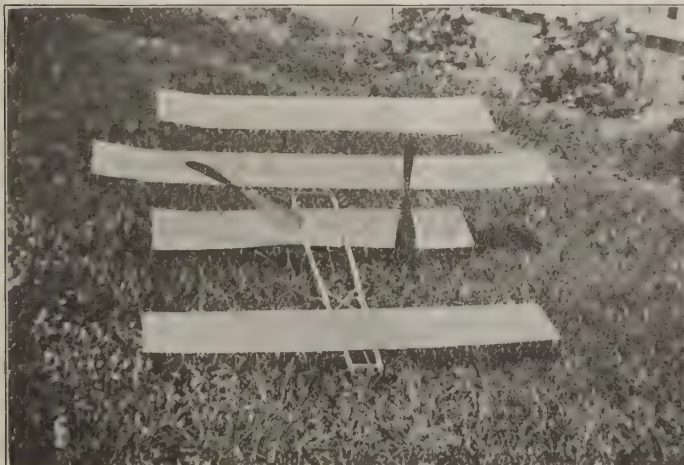
It was the first riser meet of the year and the results were surprising. Mr. E. Cook won the meet with an average of 1,083.6 ft. and 97 sec. for three flights. His best flights were 1,394 ft. and 111 sec., the latter constituting our American riser duration record. Mr. Ward Pease made a fine flight of 98 sec. and averaged second in the meet. The others making the team were Mr. T. Hall, Mr. A. E. Nealy and Mr. C. Arens in the order named. The average distances and durations of each member's three official flights were:

Members.	Distance.	Duration.
E. Cook.....	1,083.6 Ft.	97 Sec.
W. Pease .....	713.6 Ft.	80.3 Sec.
T. Hall .....	759.3 Ft.	72 Sec.
A. Nealy .....	558.3 Ft.	58.3 Sec.

Mr. Arens had difficulty in rising, owing to the short rising board, but made some hand-launched flights of good distance and duration and on this account was decided the fifth member as the rising board in the competition will be longer.

The Milwaukee Model Aero Club brought a team of five flyers and three substitutes for the meet. Saturday night a special meeting was held in their honor at the South Parlor of the Auditorium Hotel.

The Villard distance team, consisting of Mr. A. Nealy, Mr. T. Hall, Mr. E. Cook and Mr. W. Paese, were in fine shape for the finals. Each member of the team is required to have duplicates for every part of his model. Mr. J. S. Stephens, vice-president of the Aero Club of Illinois and member of the Aero Club of America, was one of the official observers.



The tri-plane, shown in the accompanying photographs, was designed by Mr. John Fleming and constructed by Mr. George A. Cavanagh, both members of the Aero Science Club. Mr. Fleming is now working on plans for a compressed air motor which will be installed in the machine later on. The machine is now driven by rubber bands in an ingenious manner, but it is the hope of the builders to have the compressed air motor finished in time to enter the machine in the October 12th contest for machines of this type. The machine is constructed in such manner that the motor can be used to operate one propeller of tractor type, or two propellers of pusher type.





Aeronitis is a pleasant, a decidedly infectious ailment, which makes its victims "flighty," mentally and physically. At times it has a pathologic, at times merely a psychologic foundation. It already has affected thousands; it will get the rest of the world in time. Its symptoms vary in each case and each victim has a different story to tell. When you finish this column YOU may be infected, and may have a story all of your own. If so, your contribution will be welcomed by your fellow AERONUTS. Initials of contributor will be printed when requested.

#### Bugtown Courier

Friday night, or early Saturday morning, just as the town clock was striking 2, Nathan Lucas, the well-known station agent at Chaumont, heard the distinctive whirr and buzz of a motor in the air. He was positive that it did not come from an automobile nor a Ford. He could swear that it was not the put-put-put of a one-lunged motor boat, nor was it the chug-chug of a twin-cylinder motorcycle. It might have been, says Mr. Lucas, the asthmatic breathing of a summer resident in the neighborhood, but he hardly thinks so, for he would have heard the sound before. Well, anyway, when he had jumped into his clothes and rushed to a door, he could see nothing of the night wanderer. He felt sure that it was an aeroplane bound for Cape Vincent and Canada, but he couldn't exactly spot it.

The appearance of the supposed aeroplane and stories about it emanating from surrounding villages and Watertown caused no little excitement in Chaumont, and the natives, as well as summer visitors, have stood on guard every night since the first appearance awaiting a return. Wednesday night they were rewarded. About 7:30—it may have been nearer 8—sure enough there it came. Gliding easily in the balmy clouds about half a mile or so above the lake, was the outline of an aeroplane. Lights in the body of the form indicated that the machine was out for a night trip, and excitement grew by leaps and bounds. If something would only drop from the machine so there would be a

clue to work from, then the sleuths who have been trying to solve the mystery could bring in their decision. But alas! It passed out of sight, and none knew whence it came nor whither it flew.

Just a minute to change reels.

This morning the aeroplane was recovered—that is, the alleged aeroplane, to use a newspaper term. A farmer and his son brought the beast to the village to show to the natives the only real live aeroplane in captivity.

Only ten cents, one dime, to see the eighth wonder of the world.

The line forms on the right. Don't crowd, gentlemen. Let the ladies have a chance. It was only a paper balloon. But even at that, it was a pretty big one. When the tissue hide was stretched out and measured, it was more than eight feet from the beak to the tip of its tail. The farmer explained that he and his son captured the strange creature in his pasture early in the morning before the pilot had had a chance to steam up and set sail for Canada. Some aeroplane!

#### Belated July Fourth

The match was white,  
The flame was blue  
The giant cracker red,  
And Tommy saw the stars, when he  
Came down upon his head!

#### Poetry!

Wright built an air sky  
And told me it would fly.  
Your engine is fine  
And your planes are just grand,  
But you lack the driver, I see.  
Oh! I know you are the chap  
With the goggles and cap  
But where is your driver, I say?  
Smile if you must, but let me explain  
It's only a small piece of metal  
or wood,  
Just buy a propeller and see.

Wright bought a propeller  
Of metal so bright  
And pinned on his coat lapel  
Another of gold in his tie you see  
As he seated himself at the wheel  
But cher chug with a tug  
Was all the flying that day  
You still lack the driver, I see.

Wright  
(Deleted by the editor.)

#### Somewhat True

A self-made man is not always a well-made man.

Hangers-on are only welcome by the street car companies.

Few can wear an air of importance without it seeming a misfit.

Even a stingy man will allow another to share his opinion.

Unfortunately the fire of genius cannot always keep the pot boiling.

#### Mother Arrived Just in Time to See the "Daring Aviator" Hurl His Last Bomb By FONTAINE FOX.



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## Kansas News

By W. L. Jack

There has been flying at Overland Park every Sunday for some time past and the Champion Aeroplane Company has been working 15 hours a day for the past month repairing and making parts for three machines which were wrecked in a storm. Having completed these machines all three were out Sunday, July 25th. Piloting one of the machines Mr. Gertson gave the large audience several thrills with his "topsy turvy" flying, while aviator Pendhym went up for a high climb, reaching over 9,000 feet in his "Baby Day" tractor. Mr. Pendhym will shortly have out his 80 h. p. Tractor.

Frank Champion had out his Monoplane, now fitted with red wings and made several pretty flights in it.

The Champion Aeroplane Company has a number of men working at the present time and expects soon to enlarge the force. With the up-to-date equipment the company now possesses it is surprising what a large amount of work can be turned out in a short time.

## Cicero Notes

De Lloyd Thompson was out with his machine Sunday and did considerable work with passengers. His Gyro was turning over nicely and the extra weight of a passenger seemed to make little difference in his getaway and glide.

Mr. Laird also made an eight-minute flight, ascending to quite an altitude and circling down gracefully. Mr. Laird is to be congratulated on his recent successful flying in Grant Park during "Chicago's Market Week."

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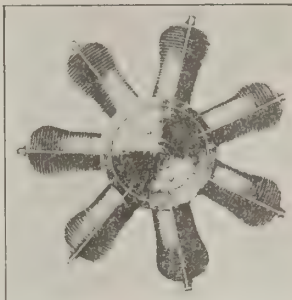
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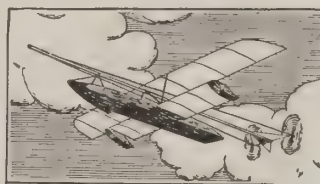
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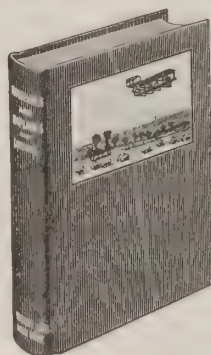
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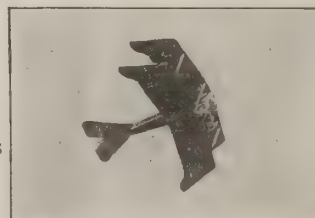
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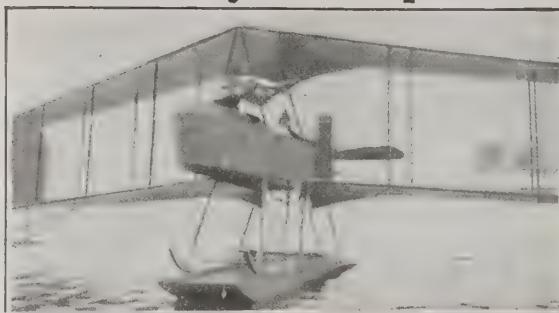


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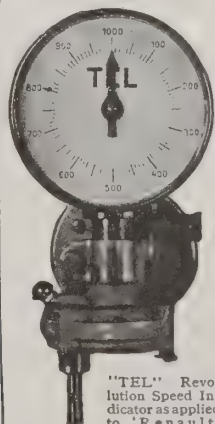
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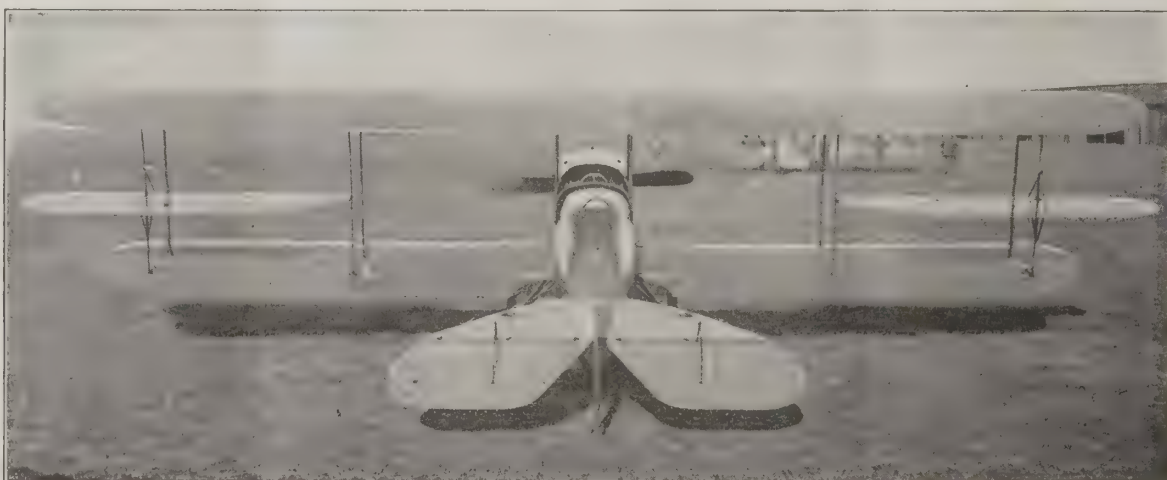
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## WEEKLY

VOL. 1. No. 24

AUGUST 30, 1915

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**Convention of Aeronautic Engineers,  
Aero Show and Aviation Meet  
to be Held Simultaneously**

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**Navy Wants Thirty-eight  
Aero Motors**

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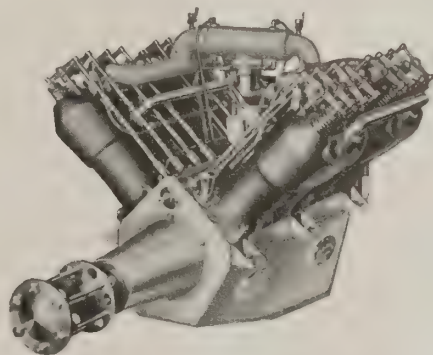
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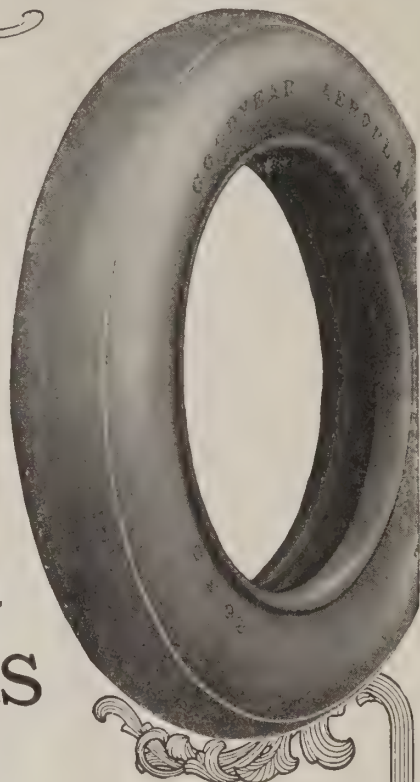
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PUBLISHED WEEKLY BY THE AERIAL AGE COMPANY, Inc., 116 West 32nd Street, New York City

Entered as Second-Class Matter, March 25, 1915, at the Post Office at New York, N. Y., under the Act of March 3, 1879

VOL. I.

NEW YORK, August 30, 1915

No. 24

## Convention of Aeronautic Engineers, Aero Show and Aviation Meet to Be Held Simultaneously

To bring together the aeronautic engineers, the aeronautic experts and aviators to discuss aeronautic problems, and to enable them to see each other's aeroplanes and aeronautical motors in action as well as on exhibition, the Aero Club of America and the American Society of Aeronautic Engineers have decided to hold simultaneously an aerial show, aviation meet and a convention of aeronautic engineers.

This will be the first time that the aeronautic engineers of this country meet to exchange views and to discuss the problems which affect them all, and their first opportunity to see each other's aeroplanes and motors. Some of the leading aeroplane constructors have never seen aeroplanes other than their own since the meets of 1910-11. It can easily be seen, therefore, that their "getting together" will be a most important event, and that it will be productive of good results.

There are at least one dozen aeroplane constructors who manufacture standard aeroplanes, and more than thirty concerns manufacturing and developing aeroplane motors. Then there are scores of makers and dealers of propellers, magnetos, radiators, stabilizers, aeroplane, dirigible and balloon fabrics, life-preservers, scientific instruments, such as compasses, barographs, altimeters, aneroids, revolution recorders and special instruments, such as the aviaphone, etc. The need is now to bring about the selection of the best, and the adoption of devices and instruments which afford greater safety and convenience. For instance, the compass is the most useful and necessary instrument for air navigation. It is not yet used by American aviators—therefore we have practically no cross-country and long-distance flying. The self-starter and muffler are not used, and many sportsmen await their adoption to take up aviation, and the general popularization of aviation is delayed thereby.

The problems to be discussed, to solve which requires the combined consideration of the engineers, are many and varied. Here are a few:

1. The increase of the factor of safety in the construction of aeroplanes; agreeing on a minimum, and enforcing same to prevent amateur constructors from sending unsafe aeroplanes into the air. At present only very few of the aeroplane constructors have the facilities or knowledge for testing or figuring out the factor of safety of different parts of their machines. The aim has been to develop a factor of safety of ten, and not less than six.

2. At present different types of aeroplanes are fitted with different types of controls, which differ sufficiently to require pilots to take additional courses of

training to learn to operate them. In case of need this would cause considerable trouble, as the pilots would have to take special courses before being able to operate the machines available. In England, France and Germany the controls have been standardized, the one generally adopted being what is known as the "Dep" control.

Many American aviators favor the "Dep," but it may not be the best after all. To establish this fact, and whether or not a better one can be evolved, will require a general discussion by those who have to use the controls; and the standardizing of controls bringing about the general adoption of one system, can be effected only by general agreement on the part of the constructors and the approval of the Army and Navy authorities.

3. Standardizing the propeller flange so that any propeller of a certain size can be used on any make of engine. At present they are all different, and the difference causes considerable inconvenience.

4. Standardizing the mounting or frame for motors, so that an aeroplane having a standard mounting can take all water and safe air-cooled motors of a given horse power.

5. Standardizing the aeronautical nomenclatures; adopting standard names for different parts of aeroplanes. At present different constructors, engineers and writers use different names for the same thing. One finds, for instance, the part of the aeroplane where the pilot and passenger sit referred to as the "nacelle," "fuselage" and "chassis," which is misleading.

The discussion of motors, magnetos, radiators, propellers and other vital parts of aeroplanes is most important at the time when the demand for aeroplanes is growing to the point where it necessitates the development of special machinery to do the work heretofore done by hand. The adoption of machinery in the manufacture of aeroplanes will logically result in bringing down the price of aeroplanes considerably, and that will bring about a more general use of the aeroplane for general purposes.

From the military standpoint the standardizing has tremendous value. As our own aeronautical strength has to be the combined strength of the aeronautical organizations of the Army, Navy and Militia, general standardizing of aeroplanes and controls will make every aviation squadron a unit which can be added to the other units to form a mighty air fleet in case of need and each unit can be detached and sent to operate alone or with other units at any military base.

The aviation meet will be held at the Sheepshead Bay Speedway, which is located within thirty minutes' ride of the City Hall of New York.

The Aero Show will be held at the Grand Central Palace, Lexington avenues and Forty-sixth street. The



convention of aeronautic engineers will also be held at the palace, and may last several days. The time planned is late in April and early in May, 1916.

### The Navy Wants Thirty-Eight Aeronautic Motors

The Navy wants thirty-eight aeronautic motors and invites bids for same. The time given in which to prepare bids is short—possibly too short for two-thirds of the concerns and individuals who are developing motors. Being inventors and engineers, most of them may not feel justified in anticipating results which they cannot ascertain on time to base their bids on them. Some of the conditions are rather severe, and conservative engineers and concerns may consider themselves debarred.

We hope that nothing like this will happen. We understand that the shortness of time allowed for the preparation of the bids is due to the desire on the part of the authorities to secure motors in the shortest time possible. Regarding the severity of the conditions, it is understood that as such a set of conditions had to be drawn, the authorities thought it just as well to draw them as near to perfection as possible. Bids will naturally be considered for engines as available. What is wanted is the best obtainable.

This development is most gratifying—and it is hoped that manufacturers, engineers and inventors will make every effort to assist the Navy to get what it needs.

### Making the Public "Dig Down" for Defense

New York Daily Mail

THE national guard, which with the regular army would form the first line of land defense in case of a serious war, does not possess a single aeroplane. The field artillery batteries of our citizen army are without these adjuncts which the European war has proven to be well-nigh indispensable for range finding.

For scouting we would have to depend upon the ridiculously small regular army aviation corps, and those civilian aviators who would be hustled into service without any previous knowledge of the highly technical art of military observation.

Now the national guard would like to possess a few machines. The officers and men do not look with any great enthusiasm upon the prospect of some day going into the field without enough of these "eyes of the army" to protect them from surprise and perhaps annihilation. Appeals have been made to the War Department. But Congress, having deepened most of the creeks that run past the bailiwicks of its members and having built some of the handsomest small city postoffices in the world, also having maintained expensive army posts at places where they have been useless since the Indian wars, has been too economical to appropriate money to aid the state troops in the purchase of aeroplanes. The War Department is unable to help out in any way.

The Aero Club of America has decided, with the approval of the War Department, to appeal to private persons to subscribe enough money to provide the guardsmen with machines. In other words, the people are to buy a much-needed part of their military equipment out of their own pockets.

Last year the New York state troops were deprived of their encampment because the state did not appropriate enough funds. This year the militia of New Jersey faces the same situation. Several organizations have defrayed their own expenses for week-end encampments and tours of instruction. There are many other expenses which the men in the service pay themselves. Now the public is to be called upon for aid.

The idea might be carried to its logical conclusion. Why have any public appropriations for our citizen army? A man who can afford an automobile should be able to purchase a field piece; one who owns a steam yacht might be relied upon for an entire battery. Smaller fry could furnish their own rifles and infantry uniforms. Why spend for such unproductive purposes as that of national defense when there are so many vote-producing ways to use public funds?

### Why Not Have an Aeroplane?

[Editorial in Poughkeepsie (N. Y.) Eagle.]

One lesson taught by the great war on the other side of the ocean is the great value of the aerial service. The air navigators have perhaps not done very much damage by dropping bombs, but they have been of immense service as scouts, and the nation that is superior in the air has a very great advantage which it takes many men and guns to overcome. According to the Aero Club of America the Russians have lost Warsaw as much because of their shortness in aircraft and in competent air pilots as from shortness of ammunition. France and England have apparently established on the west front a certain superiority over the German aircraft, and if reports are to be believed, they are up and after the German scouts every time the latter appear, and usually succeed in driving them off. The aeroplanes, too, seem to have greatly limited the usefulness of the great ponderous German Zeppelins. An English writer of note, Mr. H. G. Wells, has recently advocated the building of 10,000 aeroplanes, and declares that they would win the war at far less expense than any other means suggested. He is doubtless rather too enthusiastic over the prowess of the aircraft, for, after all, it is the troops on land, in the final action, usually infantrymen, who push back the enemy and make the advances, or hold the lines against attack. The aircraft can't be much more than auxiliaries, but even so, they are of enormous importance and no nation can call itself in an adequate state of defense that does not possess a large number of flying machines and a large number of men trained to operate them. So far in this country, which invented the aeroplane, it has been little used except for exhibition purposes and to a limited extent by adventurous sportsmen. France has gone farther than we have in developing the machines, and the French have shown their traditional daring in navigating them. We are now manufacturing a large number of aeroplanes in this country and shipping them abroad and have made many improvements in the line of greater stability of flight and strength of construction, but we do not seem to be training any considerable number of men to operate them here.

Right at this point a well-known citizen of Poughkeepsie makes a good suggestion. He says that it would be a simple matter for the people of every city as large as Poughkeepsie to raise by subscription enough money to buy an aeroplane. There would be a dozen or two adventurous young men in town who would jump at the chance to learn how to operate it, and arrangements should be made to have them taught at aviation schools. Doubtless many of them would be able and willing to pay their own expenses. In that way each town could train a considerable number of air navigators who would make an invaluable reserve upon which to draw in case of necessity. The idea is certainly a good one. Aeroplanes are not very expensive. They cost less than automobiles and motor boats, and less even than some of our locally well-known ice yachts. Why shouldn't Poughkeepsie get up an air club and own one?

(The suggestion is a good one and we hope it will be carried out. The statement that aeroplanes "cost less than automobiles and motor boats, and less even than some of our locally well-known ice yachts," is undoubtedly inspired by the experience of Mr. J. B. R. Verplanck, who lives in that locality, who has already had three years of service from the Curtiss flying boat, which he acquired in the Spring of 1913.)

### NATIONAL AEROPLANE FUND

List of Subscribers to National Aeroplane Fund and amounts received in the past week:

Chas. A. Belin	\$100
Chas. A. Fowler	100
William P. Clyde	100
Edwin Binney	25
J. V. V. Booraem	25
R. A. Carter	25
John McE. Bowman	25
Enoch C. Bell	25
Gerard Beekman	25
F. T. Bedford	20
Frank A. Collins	10
Mrs. C. C. Auchincloz	10
Samuel Beck	10
A. H. Bond	2

# THE NEWS OF THE WEEK

## Annual Outing of Curtiss Plants' Employees

The combined Curtiss companies, including the Curtiss Aeroplane Co., of Buffalo; the Curtiss Motor Company, of Hammondsport; the Curtiss Motor Co., of Buffalo, and the Curtiss Aeroplane & Motors Co., Ltd., of Toronto, held their annual outing at Olcott Beach, on Lake Ontario, on Saturday, August 21st. Despite the threatening weather, more than two thousand attended. An interesting athletic program was carried through, at the termination of which Mr. Glenn H. Curtiss distributed the prizes to the successful contestants. This is the first large annual outing that has ever been held by an aeroplane company, and is an interesting indication of the recent tremendous growth of the aeronautical industry.

## Sturtevant Aeroplane Company Organized

The effect that attention to military preparedness and the war have had on American industry in the resignation of government experts in various departments in order to enter into manufacturing enterprises, is further revealed by a recent announcement that Grover Cleveland Loening of New York, who has been the aeronautical engineer of the U. S. Army Signal Corps, and was in charge of instruction and experimental work at San Diego, has resigned from the service in order to become the vice-president of the Sturtevant Aeroplane Company, recently incorporated under the laws of Massachusetts.

No announcement has been made as yet of the proposed activities of the company and all information on its business and organization has been withheld, although it is understood that the company is to enter into the manufacturing of aeroplanes on a large scale at its factory located at Jamaica Plain, Boston, with over 30,000 square feet of floor space available.

Mr. Loening's text books on aviation are widely used in aviation schools, both in this country and in Europe, and his recent work, "Military Aeroplanes," is used as the standard text book at the army's aviation schools.

The recent world's record made at San Diego for three-passenger endurance flight of seven hours and five minutes was made on an aeroplane that had been modified in design by Mr. Loening, who is recognized as one of the most prominent and expert aeronautical engineers in this country.

## Sacramento Raising Funds for Aeroplane Station

Much interest is being manifested in the establishment in Sacramento, Cal., of an army aeroplane squadron, and already \$900 has been pledged toward a necessary fund which will range from \$6000 to \$7000. The subscribers thereto are: The Hermitage club, \$500, employees of the Sacramento division of the Standard Oil company, \$200; Charles Stephens, \$100 and D. H. Armstrong, \$100. Mr. Armstrong has already

enlisted the aid of Assistant Adjutant General C. W. Thomas Jr., who has promised to do all he can to aid the establishment of an aviation camp there, similar to the one now in San Diego.

At the last session of Congress, \$1,000,000 was appropriated to encourage the establishment of aviation corps within the United States. It is proposed to have them auxiliary to the national guard organizations of the several states. Mr. Armstrong, who is connected with the Standard Oil company in Sacramento, was formerly an ensign in the naval militia of Los Angeles.

## Warning

Unscrupulous persons, representing themselves to be the agents of leading British and American aeronautical construction plants, are plying a nefarious game in the Eastern States at the present time, and we would warn our readers of their obnoxious presence. Usually they contend that they have been robbed of their money, and ask for temporary assistance, either in the form of a loan or in return for a check which on presentation is found to be spurious. For obvious reasons we cannot establish the aliases used by these swindlers, but if any reader should be approached for a loan on this basis, and wishes to investigate the matter, we shall be glad to have him call up *Aerial Age*, when we shall transfer all available information concerning the identity of these parties.

## Tribune Aeronautical Reporter Goes to Europe

Charles G. Styles, the New York Tribune aeronautical reporter, has sailed for Europe on an extended tour of the warring nations to make a study of the utility of the aeroplane as a factor in modern warfare. Mr. Styles expects to be gone about a year.

## Captain Willoughby Urges State Aviation Corps

Captain H. L. Willoughby as a member of the Aero Club of America was in consultation recently, at Newport, with Governor Beeckman relative to an aviation corps for the state naval militia. The governor is said to have welcomed the proposition and the matter is now to be put up to the adjutant general. The Aero Club of America has started a movement to provide and encourage naval militia aviation corps and several states are already showing progress in this line. The club has, in fact, been the means of providing some Reserves with flying machines, and now the government has come forward with a promise to assist so far as it can such corps as are organized.

The Timson-Albree Aeroplane, designed by Geo. Norman Albree and built in Swampscott, Massachusetts, embodying the Timson-Albree principles. First flight made by Mr. Albree on June 11th over Lynn Beach, and later flown by Mr. Clifford L. Webster, of Marblehead. In all these flights a Hendee motor, developing about 35 h. p., was used and a speed of nearly 85 m. p. h. was obtained.







C. La Q. Day, the seventeen-year-old aviator, with his mother, at Gibson City, Ill.

#### Sturtevant News

Mr. Chanonhouse, an expert aviator, who flew the first aeroplane equipped with a Sturtevant engine, has become associated with the Sturtevant organization as head of the aeronautical motor testing department.

Mr. Chanonhouse has devoted considerable time to the development and testing of gasoline engines and in a recent interview stated: "I have just completed tests upon thirty 140 HP. eight-cylinder aeronautical motors produced during July by the B. F. Sturtevant Company and not a single mishap occurred, only a few minor adjustments being necessary.

"Each motor is subjected to a rigid test with a fan dynamometer under the same conditions which it would operate in actual service. These dynamometers have been carefully calibrated and absorb 140 HP. at 1,200 r.p.m. of the propeller shaft, the crankshaft turning at 2,000 r.p.m.

"The motor is run for one hour at half-throttle and then one hour at full throttle, after which it is sent back to the assembling room. There it is taken down and each part is thoroughly examined. It is then reassembled, put on the test stand and given another run of one hour at full throttle.

"The consistent performance of these engines is remarkable, each motor going through its tests without a hitch. This is due to the excellent design of every detail and the unusual thorough way in which they are manufactured and assembled."

#### Sperry Gyroscope Co. Building Large New Factory

The Sperry Gyroscope Company, of Manhattan Bridge & Plaza, Brooklyn, recently leased for the term of one year a plot at the foot of Ocean avenue, Amityville, and E. S. Grifing, of Bayside, has erected a hangar for the Curtiss flying boat, the property of Lawrence Sperry.

The Sperry Gyroscope Company has recently broken ground for a fourteen-story factory to be erected at the Flatbush avenue extension, Brooklyn. The company manufactures the gyroscope compass, which is the invention of Elmer G. Sperry. Two of these compasses have been installed on each of the United States battleships. Mr. Sperry is also the inventor of the aeroplane stabilizer which is being perfected by his son, Lawrence Sperry. Lawrence Sperry has been operating his Curtiss flying boat for some time on the East River, his hangar being at the Brooklyn Navy Yard. Traffic on the river has made his experiments rather difficult and dangerous, so went to Amityville as the most suitable place for his headquarters.

#### McGee Breaks Crank-Shaft Over Attleboro

While flying 2000 feet over Attleboro, Mass., recently Jack McGee had the crank-shaft of his motor break. He succeeded, however, in gliding safely back to his hangar. McGee and Gerald T. Hanley were flying in their separate biplanes about the bay. McGee headed for Rocky Point and came back. When about over Field's Point his crank-shaft snapped.

#### A Correction

In a recent issue of Aerial Age, an article appeared relative to the use of the altitude aneroid barometer in aviation.

The writer of this article mentioned the fact that all aviation barometers were of European manufacture, which up to a few months ago was perfectly true.

The tremendous demands of the aeroplane and other manufacturers for instruments of this character demanded that some movement be made in this country, for, with supplies cut off from Europe and with England's embargo on aeroplane materials of all kinds, it seemed as if this most necessary instrument would have to be omitted from the instrument boards of machines.

The Taylor Instrument Companies of Rochester, N. Y., are very closely allied with the famous Short & Mason (London) factory, and before the war purchased in very large quantities aneroid mechanisms completed to the point where that company's experts could complete the instrument.

Aneroid barometers, while comparatively simple in construction, are instruments which were invented and developed by the Europeans. Each instrument is individually constructed and practically made by hand throughout. This class of work neither appeals to American mechanics or to American factories.

The situation as it stands now is such that altitude barometers for aviation can be supplied and are made by the Taylor Instrument Companies, and it is satisfactory to know that this Company is at present working on the order for instruments for the U. S. Signal Corps and the U. S. Navy. Large quantities of their instruments have been supplied to the leading manufacturers and foreign governments for use on machines in the present war.



John Guy Gilpatric, on the extreme right, and his class at the Curtiss Toronto School.



**Chance M. Vought, "Bob" Fowler, Steve McGordon, David H. McCulloch, F. C. G. Eden, New Additions to the Curtiss Institutions**

The above mentioned gentlemen are the new additions to the Curtiss institutions—which are growing faster than the proverbial mushroom. They have grown to such a size that, as told elsewhere in this number, they recently held an outing which was attended by over *two thousand* of their employees!

**New Flying Record Established at Curtiss Toronto School**

A new record for school work was established by Pilot John Guy Gilpatric at the Island hangars of the Toronto Curtiss Aviation School last week, when he spent 8½ hours flying during the day. This is not an endurance record, as the time was made up of the regular twelve-minute flights carried out by the students of Gilpatric's class. During the period of time descents were made every twelve minutes to change students.

Officials of the Toronto Curtiss company are proud of the records and near-records being established at the two Toronto schools.

That the rumor recently circulated to the effect that the Naval Service would not accept any more men for instruction at the Toronto schools was unfounded is evidenced by the acceptance by Rear-Admiral E. C. Kingsmill of a number of students during the week. The following ten students have been taken on in the week, to be divided between the Naval Service and the Military Wing; H. W. Eades, Victoria, B. C.; G. H. Simpson, city; C. H. Butterworth, Vancouver; W. J. Sussan, Ottawa; W. B. Galbraith, Carleton Place; G. F. Ross, Toronto; H. N. Sands, Toronto; A. T. Whealy, Toronto; W. N. Brown, Toronto; W. R. Wilson, Toronto.

Total enrollment now number 154. Since the school opened fifty-four have graduated from the boat machines to Long Branch, and thirteen have graduated from the land machines. At present there are thirty in training at each of the schools. There is a list of eleven students waiting for an opening in the classes at Long Branch, and sixteen waiting for an opening at the Island school.

The following five students graduated from the boat machines during the past week; A. Goulding, R. M. Coram, A. J. Boddy, R. T. Griffin, and S. B. Lee.

**Puget Sound News**

By ROBERT LA TOUR

Mr. Boeing, one of Seattle's prominent millionaires, after taking several trips with Aviator Maroney, has got the "bug" and is now at one of the southern schools of aviation. Mr. Boeing is having two machines built for him here and after completing his course will return and fly them in Seattle.

Aviator Maroney has strengthened the sides of his flying boat, so that trouble from weakness at that point has been overcome. Maroney has been appointed a member of the American Society of Aeronautic Engineers.

Someone entered a hangar at Harbor Island last week and stole a magneto from Tarada's tractor.

Several new pupils have enrolled in the Maroney School on Harbor Island.



W. L. Bonney and a group of the Carranza followers near Mexico City.

**Military Honors for Dead Army Airmen**

At Fort Sill, Oklahoma, military honors were paid to Captain George H. Knox, who was killed on August 13th when an army aeroplane he was piloting over the United States army manoeuvres grounds fell a distance of 350 feet. Immediately after the services Knox's body, escorted by two companies of the Nineteenth Infantry and the quartermaster's corps, was taken to a railway station to be sent to New York for burial.

Lieutenant M. D. Sutton, who fell with the aeroplane at the time Captain Knox was killed, escaped without serious injury. Captain Knox was making his second flight in the aeroplane when it fell.

**Kays and Von Figgelmessy to Fly at Allentown**

Harry Wilbur Kays, manager for Baron Von Figgelmessy, will probably stage an exhibition at the Allentown Fair Grounds, Allentown, Pa., in the near future. Kays and Figgelmessy have appeared together in aviation meets throughout the country during the summer and on July 5 thrilled 50,000 people with their exhibition at League Island Navy Yard, Philadelphia.

The Glenn L. Martin Tractor hydroaeroplane of the type being supplied to the Netherlands. It is equipped with an A5 Hall-Scott 125 h. p. motor, which developed 140 h. p. in a recent test.





### Saint Louis Makes Bid for Aviation Industries.

With a visit of Major J. J. Dickinson, of the Navy League, a Missouri branch of the national body was organized. Mr. A. B. Lambert, former President of the Aero Club of Saint Louis, was elected President of the new organization.

Saint Louis offers many advantages to the manufacturer. Flyers having practical machines can secure free use of a large flying field, with hangars furnished absolutely free of charge. Permits can be secured from the Municipal Park Department for landing and starting from the public parks. Entirely surrounded by rivers and lakes the city offers ideal opportunities for the flying-boatman and hydro-aeroplane. The Missouri Naval Reserve will soon have a hydro-haven on an island in the Mississippi, and with the growth of the sport many boat clubs will follow suit. Far from the ocean and large lakes, Saint Louis atmospheric conditions rarely make flying difficult.

Flying machine accessories may be purchased in the city and long delays are unnecessary. The largest aeroplane propeller factory in America is here. A complete stock of such necessities as wire and turnbuckles is carried by a supply house. At least one foundry devotes its entire efforts to aeroplane fittings, and expert attention can be expected from other metal workers and the large wood-working plants. Located in Saint Louis the aeroplane maker has all the facilities of a large manufacturing city at his disposal.

For students Saint Louis has a school of aviation which offers a very complete course. When first enrolled the pupils handle automobiles until thoroughly familiar with the gasoline engine. Then they pass into the construction department and work on aeroplanes. Meanwhile lectures are given on the theory of flight and the design of aeroplanes. Finally, the students go to the flying field and become expert operators of the latest military type tractors. The school machine is of the side-by-side dual control type and the instructor is in immediate touch with every movement so as to prevent accidents.

The Saint Louis Aviation Committee is always ready to furnish information regarding anything relating to its field of activity. Manufacturers seeking a location will be assisted in every possible manner.

This has been conspicuously the case with respect to military and naval utilization of air craft. Appropriations by Congress have been extremely meagre, and while there has been no lack of appreciation in either of the military establishments of the short-sightedness of this policy, the experts of the army and navy have hitherto been powerless to apply the remedy.

Experience abroad, however, has stirred the Aero Club of America to the patriotic endeavor to arouse public opinion in the United States on the subject, and to do for this country what the French and German people did so effectively three years ago. The War and Navy Departments of the United States have planned the creation of fifteen aviation squadrons for the militia of the several States, and for twenty-two squadrons for the naval militia. To equip these squadrons there must be machines, but more essential still there must be trained aviators, a class of experts in which this country is strangely deficient. To meet these needs and to stimulate action by both the National and State Legislatures, the Aero Club proposes a public subscription, to supplement the resources of the Army and Navy. The Federal Government will train corps of volunteer aviators if the means shall be provided.

The French people in 1912 raised more than 6,100,000 francs to give their nation an aerial fleet, and the Germans contributed for a like purpose upwards of 7,230,000 marks. This led not only to a tremendous increase in public interest in aviation, but to that more practical and definite governmental participation in the movement which resulted in the creation of a military arm of immeasurable value. No plans for our own national defense will in the future be complete without adequate provision for military and naval aeroplanes, etc., and the effort of the Aero Club to concentrate public attention on the subject and to secure popular assistance in equipping the militia is worthy of the fullest support.

In the light of these facts, and of the attitude of the Federal military authorities, it is astounding to learn that a responsible official of the National Guard of Pennsylvania only last week deliberately refused an offer of the Aero Club of America to send aeroplanes and aviators to the annual encampment to demonstrate aerial scouting methods. This is a matter which should call for the prompt intervention of the Governor, as commander-in-chief of the militia, to the end that the State troops should be given every opportunity to keep in touch with so vitally important an advance in military methods.

### Aeros To Locate Seals

Consular reports for May 8th contain a suggestive item concerning a proposed innovation by owners of Newfoundland ships. The sealing fleet's operations in the Gulf of St. Lawrence this season was described in *Commerce Reports*. Its lack of success and a plan for next season is told in the following Canadian press dispatch from St. Johns, Newfoundland:

"A novel use of the aeroplane is under consideration by owners of sealing vessels as a result of the failure of the seal hunt this year. It is proposed that two experienced aviators be engaged to visit the east coast and the Gulf of St. Lawrence, respectively, just before the opening of next season and locate the herds. The information thus obtained would enable the fleet to sail directly for the scene of the hunt instead of spending much time in searching for animals.

"The direct cause of the lack of success in the past season, which ended May 1st, was the unusually heavy amount of ice packed along the coast by continuous inshore winds. The sealing steamers, although within a few miles of large herds of seals, were unable to reach them. The total catch was less than 50,000 pelts, and the loss to vessel owners from the season's operations is estimated at about \$250,000."

### Fishing for Submarines from an Aeroplane

Thomas E. Lake has recently suggested the following method for destroying submarines:

"One man in an aeroplane can destroy a submarine in less time than it takes to hook and gaff a weakfish or a bluefish, and the method is much the same.

Instead of trawling from the deck of a sloop or schooner with a silk line and live bait, you use an aeroplane, a controlling device, the secret of which I am not prepared to divulge as yet, and instead of live bait a contact bomb of terrific explosive force.

"The aeroplane skims over the sea with the bomb suspended from the controlling device, some distance above the water. Now, contrary to the belief of many persons, a submarine does not travel beneath the surface all the time. Consideration of the life of her storage batteries, air for breathing and speed make it desirable to travel at the surface whenever practicable without risk of discovery by the enemy.

"A submarine generally travels at the surface, or in the 'awash' condition, until in the vicinity of her intended attack. When within a reasonable distance of her victim she submerges so that only a few feet of water is above the periscope. In this condition she would lay in wait for or proceed toward her enemy from time to time raising her periscope above the surface to direct her course and to aim her torpedo.

"When thus submerged she would be invisible to a surface ship, but could be detected from above. The air scouts claim that even when a submarine dives very deep they can see a dark patch in the water and at least give warning to a surface ship that the undersea terror is near.

"Assuming that a submarine had been located by the operator of an aeroplane, even though the craft were considerable distance below the surface of the water, he would lower the bomb, allowing it to trail about fifteen or twenty feet above the water.

"Then he would direct his course so that the aeroplane would cut across just head of the submarine, meanwhile reducing his speed as much as possible, for speed at this juncture would be a distinct disadvantage.

"When about to cross the submarine's path, the aviator would release the controlling mechanism, allowing the bomb to fall into the water and sink. This brings the wire in contact with the periscope or any other projection of the submarine, and the bomb would thus be drawn against the side of the craft and explode on contact, the wire being automatically released from the control mechanism.

"It takes more time to explain this attack than it does to execute it. In practice it would occur so quickly as to give absolutely no warning to the submarine, destroying her and her crew. They would not have the slightest chance to escape or to know what had happened to them.

"The hopelessness of trying to drop unattached bombs on a submarine, either submerged or at the surface, considering the velocity at which an aeroplane travels, will be apparent, but with the trawling device the thing is simpler. In dropping a free bomb it is necessary to strike the craft with the missile itself. In trawling, once the wire fouls the submarine the bomb is certain to find its mark, and it will explode when it strikes and not before."



## THE VOISIN WARPLANE

By WALTER H. PHIPPS

The Voisin gun-carrier which is the subject of our description this week is one of the most interesting developments of the European war. It is a type which is rapidly finding favor for offensive purposes as its size and weight carrying ability, coupled with its great range of vision and unobstructed mounting for a large machine gun make it a terror to all machines coming within its range.

The machine is chiefly characteristic on account of its all steel construction, a feature which contrary to previous accepted theory has found great favor for military work on account of its not being affected by climatic conditions. Other outstanding characteristics of the Voisin machine are the excellent four-wheel shock absorbing chassis, the small gap between the planes and the large balanced elevator in the rear.

The chassis, which is quite different to those fitted to other machines, consists of two sets of wheels, one pair mounted on a single axle at the extreme front of the machine and connected to the nacelle by long telescopic spring absorbers, the other pair directly under the rear main beam and similarly connected by means of shock absorbing telescopic springs to the rear end of the nacelle. This provides a most excellent landing gear for military work, where landings must frequently be made on very rough ground without fear of capsizing.

The nacelle or body is built up in the usual way, the construction being mainly wood with steel for the engine and chassis bearers and braces. It provides accommodation for pilot and observer, the former sitting in front with the observer directly in back of him.

Supported by steel tubes and immediately over the pilots head is the gun so mounted that it can be easily handled by the observer, who stands up when working the gun.

A sloping dash in the nose of the nacelle deflects the air above the heads of the occupants. Behind the passengers, seat and inside the nacelle is mounted a large gasoline tank, sufficient for over 5 hours flight.

The engine, a 135 h.p., nine-cylinder water-cooled Salmson, is mounted between double bearings in the rear of the nacelle and drives through a long extension shaft a large diameter propeller which revolves behind the main planes. The engine can be started from the passenger's seat by means of a starting handle.

The main planes, which have a comparatively small gap in relation to the chord, are built up of wooden ribs over steel tube spars. Inter-connected *aileron*s are fitted to both upper and lower planes, and the chord of the *aileron*s is greater at the tip than at their inner ends in order to render them more efficient.

The elevators, which are of tremendous size, are carried on an outrigger formed of four steel tubes and are unusual

in that the elevators, which are of the balanced type, are supported rigidly at only one point on the outrigger, the remainder of the bracing being carried out by wire braces, running to the bottom of the outriggers and to a short mast on top.

Mounted on the rear vertical tube of the outrigger is the large balanced elevator, which is unusual for its great length compared to breadth.

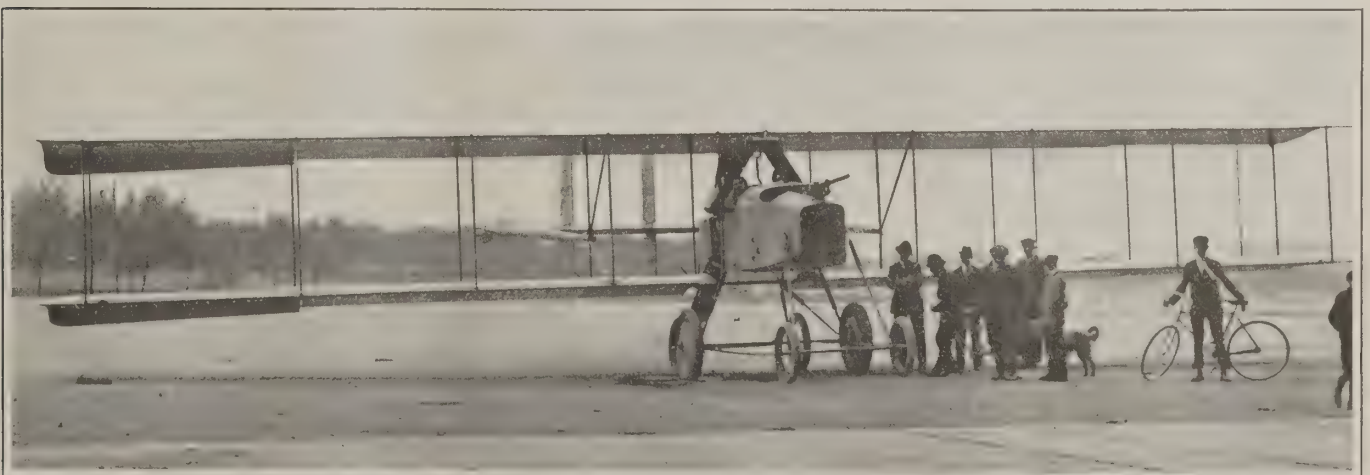
A refinement, worth noticing, and one illustrated by the accompanying drawings, are the wheel brakes fitted to the rear wheels.

By means of these brakes, which are operated from the pilot's seat, the machine can be held back by the pilot whilst



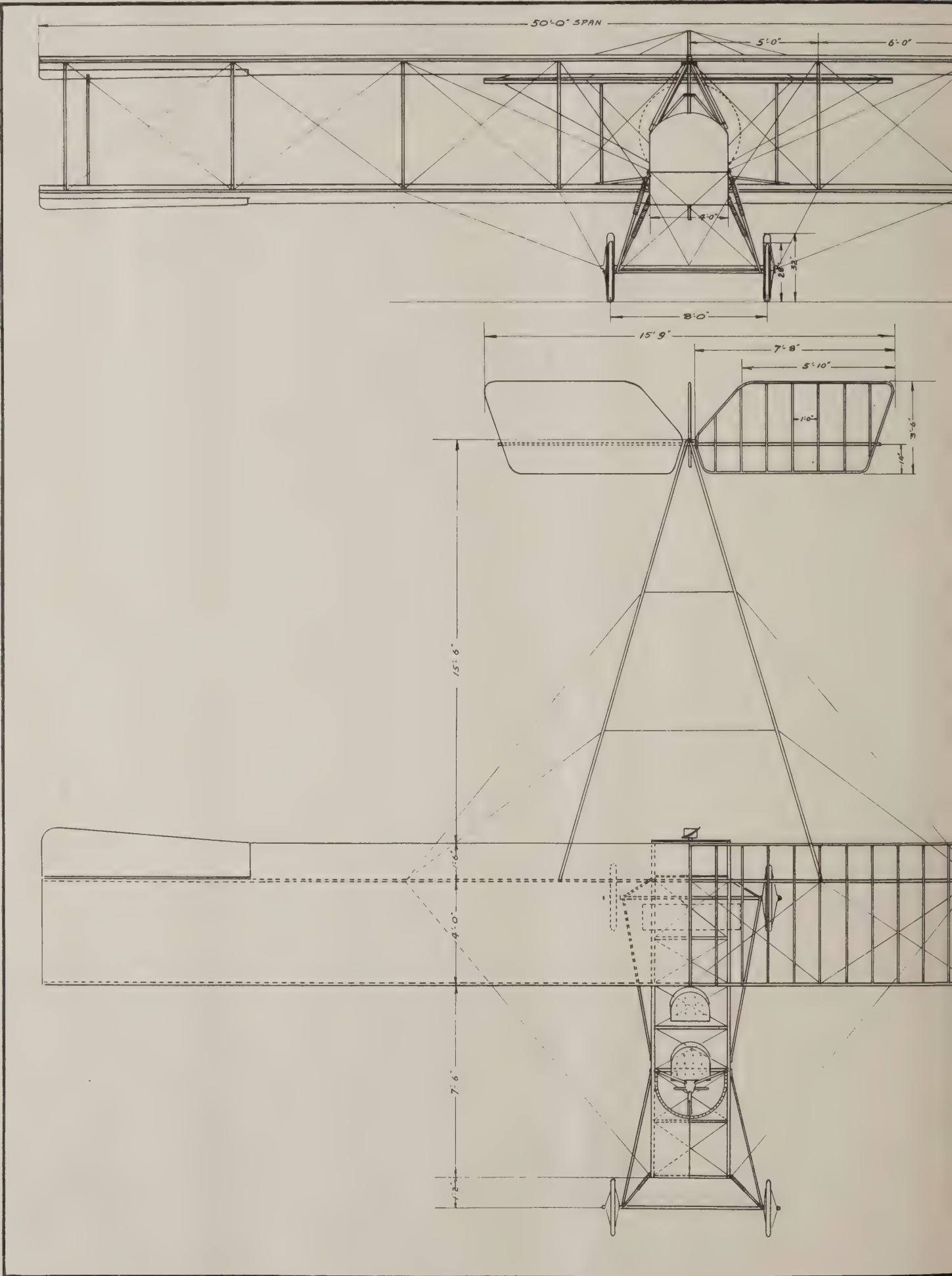
Bomb-dropping device used on the Voisin military warplane. Note the special clutches for the bombs.

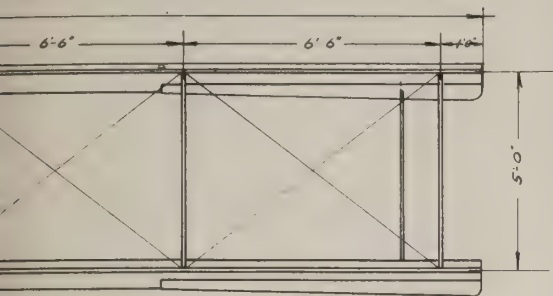
running the engine all out, so that it is possible, by the aid of these brakes, and the starting handle behind the passengers' seat, to start the machine without any outside assistance whatever, a feature which should prove useful for cross-country work where, after having made a forced landing *en route*, experienced assistants are not always available, and where the help of inexperienced, though willing, assistants may easily cause considerable damage to the machine. Another advantage of the wheel brakes is that on making a landing in restricted grounds this machine can be brought to a standstill, where others would probably be wrecked by running into obstacles.



The large 60-foot Spread Voisin gun-carrier. This was the forerunner of the present smaller gun carriers and the newer and larger double-motored types. Note the six-wheel landing chassis, steel tube construction, small gap between planes and unique tail bearers. These tail bearers have since been discarded in favor of the regular steel tube outriggers as shown in the drawings.

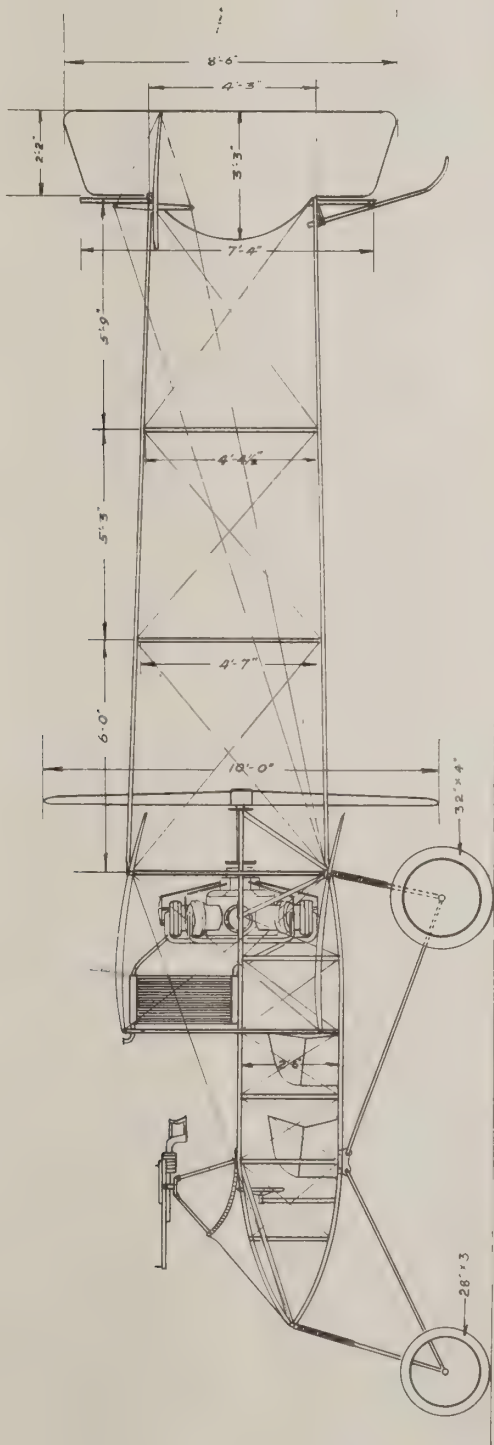
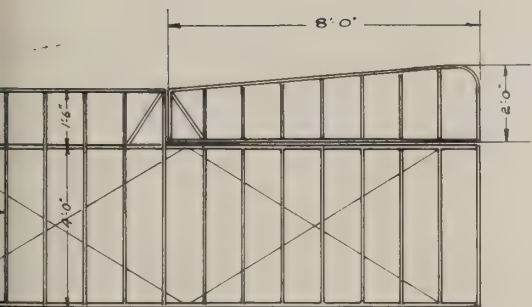






# The Voisin 135-H.P. Salmson Motored Warplane

Front, Top and Side View Drawings of the 135-H.P. Voisin Military Pusher





# THE USEFUL RECOVERY OF HEAT LOSSES IN INTERNAL COMBUSTION ENGINES

By J. B. MERRIAM\*

It is a well-known fact that, with an ordinary water supply, an engine will work satisfactorily when the temperature of water is around 150 deg. fahr., but if the temperature of the water in the jacket is allowed to rise, the cylinder will burn or score even before the jacket water reaches, say, 250 deg. The elements which affect the flow of heat from the inside surface of the combustion chamber to and into the water are:

- First. The difference in absolute temperature or the relation of the two temperatures to the absolute zero point. This is measurable, but not sufficient to cause a disastrous interference to the flow of heat which takes place somewhere between the surface of the combustion chamber and the water.
- Second. The amount of surface exposed: in an engine already built it is constant, that is, it does not change with the change of water jacket temperature from 150 deg. to 250 deg., and therefore cannot affect the results when such a change takes place.
- Third. The time of exposure: after the revolutions of the engine have been determined, it also becomes constant.
- Fourth. The unit of resistance to the flow of heat: this appears to be the only element subject to change when the jacket water temperature materially rises.

To find out why it changes, the author refers to the familiar experiment of heating water in a rough cast iron vessel. It is there found that no visible change occurs below 140 deg. fahr., but above it, small bubbles are formed which adhere to the surface of the iron. These bubbles increase both in number and size with rise of temperature, and by the time the water has reached 200 deg., the inside surface of the vessel seems fully covered with bubbles.

The secret of the entire difficulty of running an engine with the water jacket temperature above 150 deg. lies in this formation of bubbles, since, if any portion of the surface continues to increase in temperature after the formation of the bubbles, spheroidal action takes place and thus constitutes a critical interference to the flow of heat, or, which is equivalent to it, to the cooling effect of the water.

It has been further observed that each of these bubbles increases in size and finally breaks away, and a new bubble rapidly forms on the same spot, which is somewhat hotter than the metal surrounding it, because it has been protected from contact with water by the previous bubble. If, however, the water is disturbed in the vessel so as to put it in motion, the bubbles break off while much smaller, the size of the bubbles decreasing as the velocity of the water is made to increase. Through these facts, the author comes to the conclusion that the formation of these bubbles and their adherence to the cylinder walls could best be prevented by very high velocities of the jacket water, which would permit both the using of higher temperatures of water and producing as a by-product a considerable amount of steam which can be employed for various purposes.

A series of experiments were made on a 150 h.p., 4-cylinder, 12¼ x 14 in. Bruce-Macbeth type engine, fully equipped with thermometers, flow meters and gages, and a centrifugal pump which was used to force the water at high velocity through the cylinder jackets. The velocity of the water was maintained at from five to ten times that ordinarily used. The measurement was substantially as shown in Fig. 9. With this engine, it was found that it required less than 30 minutes to bring the system up to 10 lb. steam pressure, while in the other tests, the pressures have been increased to 50 lb., which is equivalent to a temperature of 297 deg. If an enclosed cooling system be used, as shown in the above figure, and only steam allowed to escape, then all of the water used must eventually be turned into steam and the entire amount of heat of the fuel, usually referred to as lost to the jacket water, will be fully recovered in the heat units restored in the steam. This appears to be actually the case. With a well designed exhaust-gas boiler, one-half of the 35 per cent. of the total heat units of the fuel lost to the exhaust can be recovered and added to the 35 per cent. recovered from the water

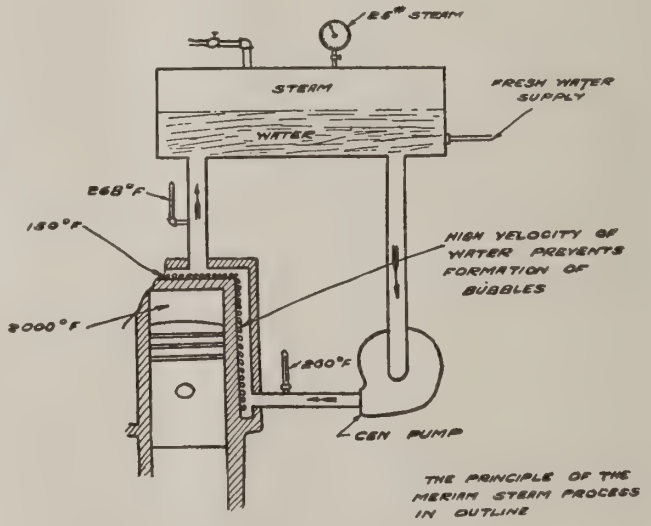
jacket, which will give approximately 50 per cent. of the total heat units of the fuel available in the form of low pressure steam. An exhaust boiler, or any low pressure or heating boiler, can be included as a part of the system.

At the same time, the efficiency of the engine as shown by Table 4, is also improved by this process, due to the higher

Table 4 Results of Tests of Gas Engine with Water Cooling at High Speed in the Jacket.

	¼ Load	½ Load	¾ Load	Full Load
Brake h. p.....	43	77	112	151
Gas h. p. hour.....	17.58	12.58	10.35	9.58
Temperatures, deg. fahr.:	14.3	11.4	9.78	9.28
Water supply .....	52	52	52	52
Inlet to cylinder.....	253	253	253	253
Outlet cylinder .....	260	262	266	267
Exhaust manifold .....	256	257.5	260	260
Steam pressure, lb.....	17.5	17.75	18	18
Lb. of water evaporated per h. p. hour .....	7.3	5	4.3	3.7

temperature of the cylinders. The small figures show the gas



consumption of the same engine when running with the cylinders at ordinary temperature. No difficulties or detrimental effects have been experienced when operating an engine under this process at maximum load and with the water jackets under full steam pressure and temperature. On the contrary, the resultant condition is favorable, since the water passes through the cylinder at such high velocity that the difference between the temperature of entering and outgoing water is less than 15 deg. and the cylinder and all parts of the engine are maintained at a uniform temperature. This temperature also remains constant irrespective of the load, as it is determined entirely by the steam pressure carried on the system. Another advantage claimed for this system is that the thermal efficiency of the engine is improved so that the fuel consumed is at least two per cent. less at maximum load and fully 15 per cent. less at one-quarter load as shown by tests.

A brief list of references on matters connected with the subject of the paper is appended to the original article (13 pp., 4 figs. deA).

\*Abstract of a paper read before the Cleveland Engineering Society, Jan., '15.



# FOREIGN NEWS

Edited by L. d'Orcy



## AUSTRIA.

Seaplanes have again proven their usefulness as auxiliaries in naval operations, when on August 19 an Austrian fleet of twenty-one vessels convoyed by a seaplane bombarded the Island of Pelagosa, in the Adriatic. The Austrian attack, which resulted in the killing of an Italian officer and three men and in the wounding of three others, was made possible solely, thanks to that lonely seaplane, which quickly ascertained that no Italian naval forces were in the vicinity of Pelagosa. In the same way the Austrian fleet promptly retired, when the seaplane announced that Italian warships were seen coming up.

## GREAT BRITAIN.

For the third time within the present month a German airship squadron has invaded the skies of the British Isles and rained a number of bombs indiscriminately on military works and peaceful inhabitants.

The German Admiralty announced this raid in the following terms: "During the night of the 17th and 18th our naval airships again attacked London. London City and important Thames establishments were liberally bombarded. Good results were observed. In addition, factories and blast furnaces at Woodbridge and Ipswich were bombarded. The airships suffered no damage, despite the heavy fire, and all returned."

A statement given out on August 18 by the Official Press Bureau, says:

Zeppelins visited the Eastern counties last night and dropped bombs. Anti-aircraft guns were in action, and it is believed that one Zeppelin was hit.

Air patrols were active, but, owing to the difficult atmospheric conditions, the Zeppelins were able to escape.

Some houses and other buildings, including a church, were damaged.

The following casualties have been recorded: Killed—men, 7; women, 2; children, 1. Injured—men, 15; women, 18; children, 3. All the above were civilians.

According to a Dutch report the German airship squadron consisted of four Zeppelins, one of which, the L-10, was fired upon by Dutch troops while flying over Vlieland. This report confirms the British official note which announced the destruction of a Zeppelin at Ostende, for the airship squadron that raided London on the night of August 9 to 10, consisted of five Zeppelins, while only four of them were sighted on August 17 over Holland, heading for the English Coast.

So far there have been eighteen Zeppelin raids on England, including two on London, causing seventy-two deaths and injuries to 250 persons, some of whom have since died.

According to the Overseas News Agency, the Zeppelin attack on the English coast on August 12 resulted in considerable damage. The agency says:

"Travelers arriving in Holland from England report that the last Zeppelin attack on Harwich caused serious damage, the extent of which has been suppressed by the Official Press Bureau.

"The explosion of heavy bombs and the resulting catastrophe caused great confusion. Coast guards deserted their posts. The number of killed is not known. Seventeen persons were wounded.

"One bomb struck the post office, and mail bags were destroyed by fire. Postal service between Harwich and Holland has not yet been re-established."

Details are now at hand regarding the destruction at Ostende of one of the Zeppelins that raided London on the night of August 9 to 10. The London *Daily News* has received the following report from its correspondent at Rotterdam:

Notwithstanding the strictest watch kept by the Germans in and around Ostend to prevent any news from leaking out as to the fate of the damaged Zeppelin which raided England on Monday night, I am enabled to give from a reliable source interesting details of its destruction.

Today a gentleman has crossed the frontier from Bruges, and brings the following story of the Zeppelin's end. Yesterday morning, he states, the German in Ostend, who would naturally know of the intended raid on England, showed more activity than usual, and a keener watch was kept. Suddenly the shadowy form of a Zeppelin was observed from over the sea, coming from a northwesterly direction, and it was easy to discern that it was in difficulties.

It was also known that no such vessel had left Belgium on the previous day, and the news soon spread that a Zeppelin, damaged in a raid on England, was seeking safety in the town.

The airship as it slowed and came nearer was seen to be dropping, and the Germans immediately rushed a steamer out of the harbor to render aid to their comrades in trouble.

Do what he would, the commander of the Zeppelin could not keep his craft in the air, and it came down with a rather nasty crash into the sea off Ostend, increasing its injuries in its fall.

A tug from the port was soon on the spot, and managed to attach a hawser. Then with all speed it commenced the work of towing the disabled night bird into harbor, together with her crew, some of whom, it is said, were injured.

Slowly the crippled airship glided into Ostend and was berthed in the harbor, but no German effort could render it free from the view of scouting allied aeroplanes, which came hawking along, searching for their prey. They soon discovered her and dropped projectiles, despite the fire of German anti-aircraft guns.

Shortly after the dropping of bombs a loud explosion was heard. The report was too strong to have been caused by the mere explosion of bombs, and a tremendous cloud of smoke rose up from the harbor. The Zeppelin, already crippled, was now nothing but a mass of twisted aluminium. Many soldiers were injured.

The aeroplanes soared triumphantly away.

## ITALY.

The following official note was issued at Vienna:

"At midnight, August 6, the Italian airship *Citta-di-Jesi*, while endeavoring to approach over Pola, was brought down by shrapnel before it could do any damage. All the crew were taken prisoners. The airship was taken into Pola."

The *Citta-di-Jesi* is the second airship lost by Italy during the war, the first one having been the *Citta-di-Ferrara*, which was bagged on June 8, near Lussino, by an Austrian seaplane. Both airships belonged to the M-type, having a capacity of 12,000 cubic meters and a power plant of 500 h.p., which furnish a top speed of 70 kilometres per hour. The radius of action amounts to twenty hours' flight at reduced speed. The M-type of airships are the production of the military aircraft factory at Vigna di Valle on Lake Bracciano; they are of the semi-rigid or keel type construction.



The Gun and Its Eyes: The Aeroplane, a British gun-spotter in Flanders, preparatory to taking its flight in order to discover an enemy battery.





# MODEL NEWS

Edited by WALTER H. PHIPPS



## CLUBS

**THE AERO SCIENCE CLUB OF AMERICA**  
29 West 39th Street New York City  
**PACIFIC NORTHWEST MODEL AERO CLUB**  
915 Ravenna Boulevard, Seattle, Wash.  
**LONG ISLAND MODEL AERO CLUB**  
401 Grant Avenue, Cypress Hills, L. I.  
**BAY RIDGE MODEL CLUB**  
6730 Ridge Boulevard, Bay Ridge, Brooklyn

**DETROIT AERO RESEARCH AND MODEL CLUB**  
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**AERO CLUB OF ST. LOUIS**  
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**MODEL AERO CLUB OF OXFORD**  
Oxford, Pa.

## THREE CLUBS COMPETE IN NATIONAL MODEL AEROPLANE COMPETITION

### National Model Aeroplane Competition

Contest of August 22nd.

Held at Garden City, Long Island, N. Y.

The first of the series of model aeroplanes contests for the Aero Club of America prizes and the Henry S. Villard Trophy took place at the Garden City Aerodrome August 22nd. The contesting clubs were as follows:

The Aero Science Club of America represented by, Rudolph Funk, Egbert P. Lott, C. V. Obst, and G. A. Cavanagh.

The Bay Ridge Model Aero Club, represented by T. H. Hodgman, Jr., Ralph Olsen, L. J. Bamberger and Walter F. Bamberger.

The Harlem Model Aero Club, represented by Harry Schultz, Alfred K. Barker, John Barker, and George Bauer.

Some very promising models were seen at the event and in spite of the 35 mile-an-hour wind some exceptional flights were made. The Club and individual results of the contest are as follows:

#### Aero Science Club of America.

	Best Flight		Feet	Total
Rudolph Funk	1429	1096	50	2575
C. V. Obst	1866	1175	200	1921
Egbert Lott	1231	1680	10	3241
G. A. Cavanagh	50 (Wrecked)		50	7787

#### Bay Ridge Model Aero Club.

T. H. Hodgman, Jr.	646	300	250	1196
William Heil	471	205	100	821
L. J. Bamberger	590	200	50	840
W. F. Bamberger	461	398	150	1009
				3866

#### Harlem Model Aero Club.

Harry Schultz	1070	300	250	1560
Alfred K. Barker	1990	1790	250	4030
J. Barker	1790	1414	1405	4609
George Bauer	950	200	75	1225
				11424

The Judges, representing the Aero Club of America, were, Messrs. Henry Woodhouse, L. D. Gardner, Henry S. Villard, Baron L. D'Orcy, G. Douglas Wardrop, Walter H. Phipps, and Burt M. McConnell.

The contest was for distance flown by models of any type launched by hand. The contestants took their place in turn at the starting line, model in hand, with the rubbers which turn the propellers tightly wound up, and launched their models into the air, where they soared up into the sky at altitudes varying from 25 to 200 feet.

The National Model Aeroplane Competition has been instituted by the Aero Club of America to encourage the efforts of thousands of young men all over the United States who are beginning their activity in aeronautics by flying and experimenting with aeroplane models.

The Wright Brothers became interested in aeronautics

through model aeroplanes and carried out their earliest experiments with just such model aeroplanes as are being flown by thousands of young men all over the country today. Among these young men there may be geniuses who may evolve new and better types of aircraft, or features which will improve the existing types. Therefore the large Aero Clubs are offering special inducements in the form of prizes to direct their interest in proper channels. Anything done now to interest the young generation in aeronautics will hasten the coming of the Age of Wings.

The National Model Aeroplane Competition is to consist of three monthly model aeroplane contests, to be held in every part of the country simultaneously. These contests are to be open to all Model Aero Clubs and organizations in America, are to be timed and judged by officials of the large Aero Clubs, and wherever there are no large Aero Clubs, by representatives of the Aero Club of America.



The handsome trophy donated by A. Leo Stevens which was won by C. V. Obst at the model competition held at Brighton Beach Race Track on Saturday, August 21st.

The contests are to be held on any day during the last half of each month, beginning with August, at places selected by the Model Clubs.

The nature of the contests is to be different each month, as follows:

August: Distance, launching from hand; any type models.

September: Duration, starting from the water. Open to model flying boats and hydroaeroplanes, the flying boats to be allowed 20 per cent in addition to the duration achieved.

October: Duration, starting from the ground; any type models.

Cash prizes of \$50, \$25 and \$10, offered by the Aero Club of America, from the National Aeroplane Fund, will be awarded to the individual members of the various Clubs making the best record each month. The Villard Trophy, donated by Mr. Henry S. Villard, will be awarded to the Club whose members collectively make the largest score during the three months—this to be computed by the point system.

A Club becomes the owner of the Trophy when it has been won for three consecutive years by its members. The rules governing the winning of the Trophy will be progressive in accordance with the progress made in model flying.

Flying model aeroplanes is a science, to master which requires knowledge of the fundamental laws of aerodynamics and general aeroplane construction, besides considerable practice. Two models, say two feet long, with two propellers of the same size, the same length of rubber, which, when twisted supplies the motive power for the propellers, and, in fact, apparently alike in every respect, will behave quite differently when launched into the air. One may go 2,000 feet and as straight as an arrow; the other may go only 100 feet, and make a circle. The difference may be due to a number of causes, including the shape or tilt of the wings, the misplacing of the center of gravity, the pitch of the propellers, etc.

The Model Aero Clubs throughout the country participating in the Competition are:

The Minneapolis Junior Aero Club, of Minneapolis.  
The Y. M. C. A. Model Aero Club of White Plains, N. Y.  
The Illinois Model Aero Club, of Chicago.  
The Pacific North West Model Aero Club, of Seattle.  
The Texas Model Aero Club, of San Antonio.  
The Concord Model Aero Club, of Boston.  
The Long Island Model Aero Club, of Brooklyn.  
The Model Aero Club of St. Louis.  
The Summit Model Aero Club of Summit, N. J.  
The De Witt Clinton Model Aero Club of New York City.  
The Texas Junior Aeronautical Society of Ft. Worth.  
The Buffalo Model Aero Club of Buffalo, N. Y.  
The Milwaukee, Model Aero Club of Milwaukee, Wis.  
The Detroit Aero Research and Model Club.  
The Aero Science Club of America of New York City.  
The Bay Ridge Model Aero Club of Brooklyn, N. Y.  
The Harlem Model Aero Club of New York City.  
The North Shore Model Aero Club of Chicago.

The contests are to be held on any day of the last half of the month, beginning with August, at places selected by the Model Clubs.

### Brighton Beach Contest

By G. A. CAVANAGH.

A very successful model aeroplane contest was held at the Brighton Beach Race Track on August 21st, in connection with the Motion Picture Benefit. Thirty model flyers were present representing the various clubs in the vicinity of New York City. The contest was held under very trying conditions making it difficult for the flyers to obtain any great duration. Mr. Chas. V. Obst, President of the Aero Science Club, won the event with a duration of 49 seconds and was personally awarded a large silver cup by Mr. A. Leo Stevens, one of America's leading aeronauts. Three of the flyers had the misfortune of losing their machines after they had crossed the field and numerous other mishaps befell the other flyers. Mr. Durant, Director of the Aero Science Club assisted by Mr. Walter H. Phipps, Vice President of the A. S. C., judged the event. After the event the flyers gave demonstrations before the motion picture machines.

### Illinois Model Aero Club Notes

The Interstate Model Aero meet between the Illinois Model Aero Club and the Milwaukee Model Aero Club

proved one of the greatest successes in the history of Middle West aeronautics.

The winning team was in doubt up to the last minute of the flying time. The Illinois Club won by a bare five points. The meet went to show that team work in model meets is as essential as in any other sport. Altho a few obtained high distances and durations it was the consistent flying of the less skillful members that brought up the averages of the teams.

The Milwaukee Club arrived in Chicago Saturday morning. During the first day they were taken about the city. Saturday night, as guests of Mr. Charles Dickens, both teams were treated to a theater party.

Sunday the meet was held for R. O. G. distance and duration. In the duration event the Milwaukee team came out ahead, averaging 72 seconds, against the home team's 71.1 seconds. In distance, however, the I. M. A. C. more than made up for this with an average of 747.3 feet, against 691.4 feet for the M. M. A. C.

Some very good flying by fliers not on the team was done. Mr. L. Hittie made an unsuccessful attempt at the H. L. duration record. His best official trial was 150 seconds. Mr. D. A. Lathrop put up an American record of 74 4/5 seconds for single tractors hand launched, and a world's record of 1,039 feet for the same type. In the competition Mr. E. Cook made an official American record of 134 2/5 seconds duration or R. O. G. models.

The club record of 85 seconds for the M. M. A. C. was broken twice, Mr. E. Eiring first raised it to 94 seconds, and finally Mr. L. Davies made 97 seconds, which mark now stands.

The flights of the M. M. A. C. are as follows:

	1	2	3	Average
Mr. C. Bates:				
Distance .....	1,064.8	615	458	712.6
Duration .....	75.8	70.8	85	77.2

Mr. E. Eiring:				
Distance .....	973.9	795	612	793.6
Duration .....	90	94	94	92.6

Mr. L. Davies:				
Distance .....	805	937	755	832.3
Duration .....	80	80	97	85.6

Mr. G. Counsell:				
Distance .....	793.8	513.7	783	696.8
Duration .....	45	55	63.6	54.5

Mr. K. Sedgwick:				
Distance .....	590	280.9	393	421.3
Duration .....	47	45.2	58	50

The averages of the I. M. A. C. are as follows:

	1	2	3	Average
Mr. E. Cook:				
Distance .....	1,060.6	1,698	882	1,213.5
Duration .....	113.8	109.8	134.4	119.3

Mr. W. Pease:				
Distance .....	965	1,038	824	942.3
Duration .....	78.4	75.2	73.2	75.6

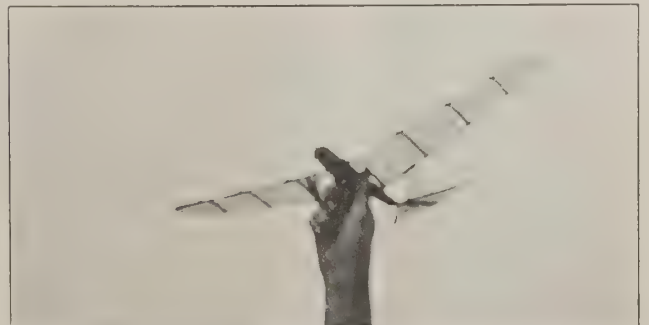
Mr. A. E. Nealy:				
Distance .....	422	691	1,170	761
Duration .....	59	59.6	58	58.8

Mr. T. Hall:				
Distance .....	893	614	352	619.6
Duration .....	65.6	44.2	53.4	54.4

Mr. C. Arens:				
Distance .....	30	168	402	200
Duration .....	47	43.4	52.6	47.7

The points are:

	Distance	Duration	Total.
I. M. A. C. ....	100	98.7	198.7
M. M. A. C. ....	93.5	100	193.5



An interesting model glider constructed by A. K. Barker, winner of the distance contest at Garden City on Sunday, August 22nd.





**Aeronitis** is a pleasant, a decidedly infectious ailment, which makes its victims "flighty," mentally and physically. At times it has a pathologic, at times merely a psychologic foundation. It already has affected thousands; it will get the rest of the world in time. Its symptoms vary in each case and each victim has a different story to tell. When you finish this column **YOU** may be infected, and may have a story all of your own. If so, your contribution will be welcomed by your fellow **AERONUTS**. Initials of contributor will be printed when requested.

### A New Record

The annual report of the St. Louis police department for the fiscal year of 1914-15 was issued yesterday. It shows that 38,896 persons were arrested during the year. As usual, practically every walk of life and every crime on the calendar was represented. Aeronauts seem to have escaped, as none are listed under that heading.

### Progression

Here's another motorless flying machine, but it is constructed on principles guaranteed to be original by an Ohio inventor. He has not flown in his motorless machine yet, as a few necessary details in its construction are still lacking.

The new principle of aerial flight, as evolved by Mr. Haller, embodies the use of enormous *rubber bands*. The inventor has spent three years on his machine, has combed the library for works on heavier-than-air craft, and believes he has at least entered a new era in aeronautics.

The flyer will perhaps enter the machine somewhat as he would a jacket, except that the flight starts with the aeronaut seemingly on all-fours. With the cranks just over his breast he winds the wings up until their tips touch. The ropes released, the rubber bands bring the wings down with a strength estimated by the inventor as equal to four horsepower.

This is sufficient, in the eyes of the inventor, to send the craft, which weighs only 200 pounds, at least twelve feet into the air. In the meantime the flyer's feet are busy on the treads, which are evolving power to bring the tips of the wings back together. The arms, also, can be used in raising the wings.

The rubber bands are counted on to insure the downward stroke. Mr. Haller is confident he can make 100 miles an hour in his motorless flying machine.

We wish him luck!

### Thrills

From western Illinois comes the following thrilling story of a daring aviator who let himself "fall so fast and far that his life hung on the turn of a hair." "It was the most reckless sporting with the demon gravity ever seen in the state.

"Around gigantic spiral after spiral, the birdman speeded up into the trackless sky until he was over a mile from the green fields, gray streets and gay throngs below. The machine stood still for one hideous instant, then deliberately turned tail up and shot straight down with the crashing speed of a meteor.

"In a quarter of a minute the plane shot through a mile of space. Dashed down almost in reach of the tree-tops, the plane seemed doomed to destruction in another fraction of a second. The aviator could be seen straining against the elevator control. Instantly the machine responded, leveled out and soared upward as gracefully as a swallow. It was the most desperate flirtation any aviator ever made with death and yet escaped while death's fingers were closing in the final embrace."

### Expression of Humor

H. G. Wells' advice to the British government to get a fleet of 10,000 aeroplanes when that government by strenuous efforts has only been able to get together 2,500 in eleven months.

Bryan's supposed efforts to maintain peace, which are creating greater disturbance than all the rabid jingoists together could create.

Bryan's idea that we can promote peace by continuing our present defenseless state and waiting to settle differences with nations that are expert fighters until after the war.



**The Return of the Prodigal.**

[Courtesy of Life]

**Military Aviation News**

It is expected that eight Curtiss OX motors will soon be received at the Signal Corps Aviation School.

Lieutenant John F. Curry, Fifth Infantry, and Lieutenant H. H. C. Richards, Fourth Cavalry, have been attached to the Aviation Section, Signal Corps. This now makes four officers under orders to proceed to the Signal Corps Aviation School, two being from the Philippines, one from Hawaii and one from Panama.

Exhibition flights were made at the San Diego Exposition in the afternoons and evenings of August 11 and 12 by Art Smith.

**Green to Enlist in Tennessee National Guard**

If the movement of the Aero Club of America to form aviation corps for the National Guard and naval militia is felt in the state of Tennessee, and should the military officials become as enthusiastic over the use of aeroplanes in state militia maneuvers as they have the states of Pennsylvania, Illinois and New York, Aviator Green of Chattanooga, Tenn., has signified his intention of tendering his services to the state of Tennessee.

**Aeroplane Mail Delivery Made**

During a very successful exhibition by H. J. Webster and O. A. Sollrig at Rock Island, Illinois, H. J. Webster carried a sack of mail containing over 500 cards and letters from the local post office to the field. In addition to the mail-carrying demonstration, Webster and Sollrig took part in the maneuvers of Company A of Rock Island and Company F of Moline, and did efficient work.

**Lyon Killed in Fall at Conesus Lake**

Lawrence Lyon, of Ithaca, lost his life recently in an accident at Conesus Lake, when the plane he was driving suddenly dove into the water from a height of 15 feet. No explanation of the accident has been arrived at, other than it is thought Lyon must have been taken suddenly ill when starting a turn.

**Flying Boat Very Popular at Lake Geneva**

Flying boating, greatest of all water sports, has been brought to a practical and profitable basis by aviator Lees, who has established a hangar on Lake Geneva and takes passengers regularly on trips above the lake.

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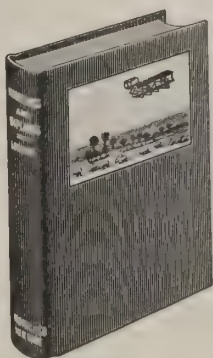
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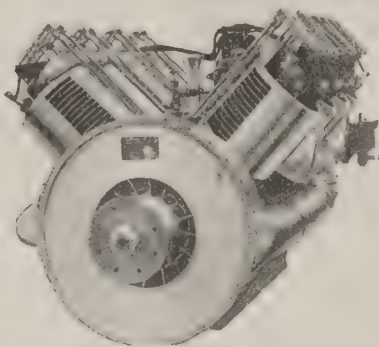
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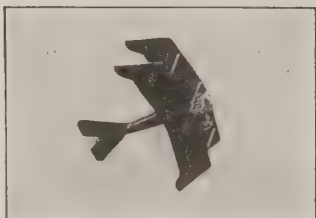
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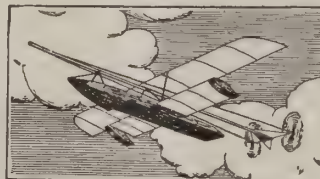
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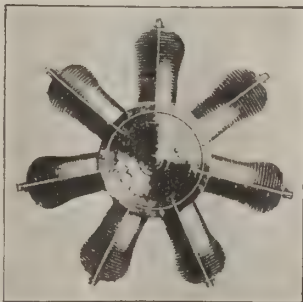
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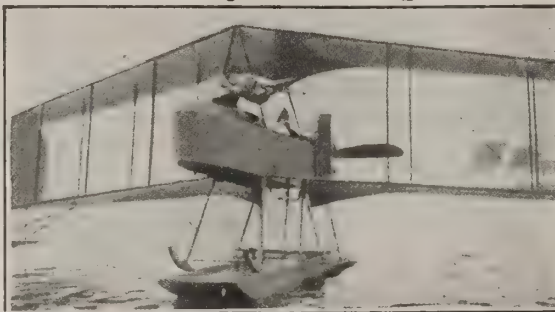


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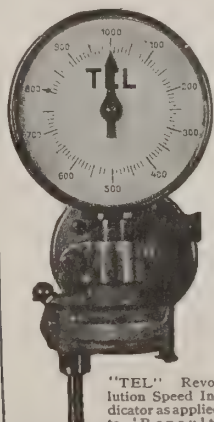
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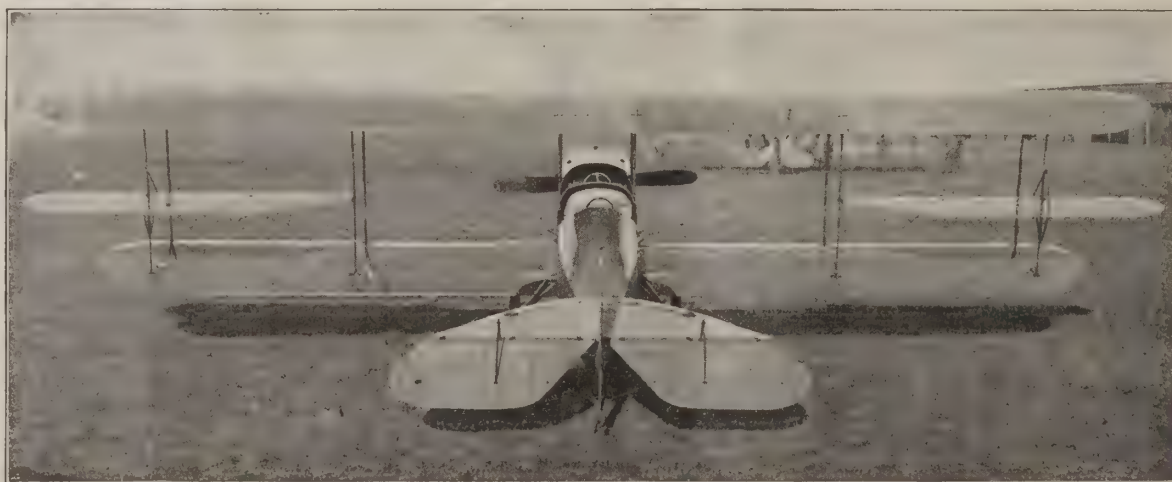
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## WEEKLY

VOL. 1. No. 25

SEPTEMBER 6, 1915

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**Seaplane Sinks Submarine**

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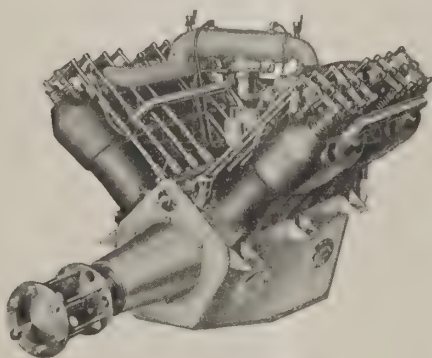
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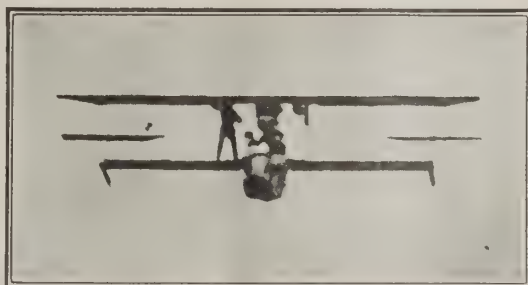
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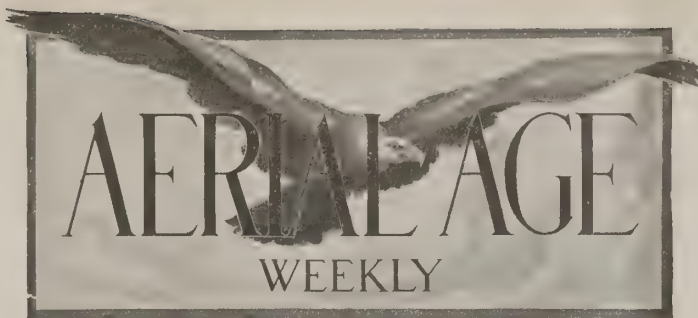
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*Entered as Second-Class Matter, March 25, 1915, at the Post Office at New York, N. Y., under the Act of March 3, 1879*

VOL. I

NEW YORK, September 6, 1915

No. 25

## Air Fleets Have Done as Much Effective Work as the Navies in the War

The reviews of one year of the war show that the air fleets have done as much effective work as the navies in the war. They have done this work notwithstanding the fact that the personnel had to be trained and the equipment had to be obtained and the air fleets organized before they could be used, and a plan of operation had to be evolved.

One year of war shows that the countries which were well equipped with air fleets had a marked advantage over those which had not. Russia's defeats have been due essentially to deficiency of her air service.

### Aeroplane Sinks Submarine

Daily events in the war in which aircraft participate have been making the best editorials. Events such as the sinking of submarines are much more impressive than the most emphatic editorial that could be written. Here is one of them.

LONDON, Aug. 26.—A German submarine has been destroyed single-handed near Ostend by Squadron Commander A. W. Bigsworth, who dropped bombs from his aeroplane.

Official announcement of the feat was made this evening as follows:

"The Secretary of the Admiralty announces that Squadron Commander Arthur Bigsworth, R. N., destroyed single-handed a German submarine this morning by bombs dropped from an aeroplane. The submarine was observed to be completely wrecked, and sank off Ostend.

"It is not the practice of the Admiralty to publish statements regarding the losses of German submarines, important though they have been, in cases where the enemy has no other source of information as to the time and place at which these losses have occurred.

"In the case referred to above, however, the brilliant feat of Squadron Commander Bigsworth was performed in the immediate neighborhood of the coast in occupation of the enemy, and the position of the sunken submarine has been located by a German destroyer."

### Sixty-Two Aeroplanes in Raid

And here is another:

PARIS, Aug. 26.—Sixty-two aeroplanes rose from behind the French lines into a gray dawn yesterday, wheeled and manoeuvred into four groups and sped away toward Rhenish Prussia. It was the biggest and most formidable squadron of fliers that had ever set out as a body to bombard an enemy position.

Saarlouis, over the heights of Dellingen, a small

town in Rhenish Prussia, was the objective, for at Saarlouis is a great German factory where shells and armor plate are being made.

The dispatch continues: "The aviators threw, with precision, more than 150 bombs, thirty of which were of large calibre."

### \$10,000 and a Flying Boat Latest Subscriptions to National Aeroplane Fund

A check for \$10,000 from a prominent woman and a \$7,500 flying boat from a sportsman are among the latest contributions received by the Aero Club of America, at 297 Madison Avenue, for the National Aeroplane Fund, which was instituted by the Club for the purpose of developing aviation corps for the militia of the forty-eight States.

The contribution of \$10,000 comes from the prominent woman who first contributed \$1,000 to the National Aeroplane Fund. This lady, whose name is withheld from publication at her request, is greatly interested in the subject of national defense, and considers the formation of aviation corps in the militia of the utmost importance. When the National Aeroplane Fund was started, she contributed the sum of \$1,000. Upon learning of the inability of the Navy Department to supply aeroplanes to the Naval Militia of the twenty-three States having Naval Militia Organizations, this prominent woman offered to contribute toward offsetting the conditions created by the Navy's inability to keep its promise, and upon being advised by the officials of the Aero Club of America that the most important need at the present time is to form an aviation corps in connection with the National Guard of New York—as this would afford aerial protection to the gateway of the Nation—and that it would cost \$10,000 to start such a corps, this lady promptly gave her check for that amount.

She offers an aeroplane, with a course of training for two officers and two mechanics.

Having two officers and two mechanics insures the development of aviation corps, whereas only one of each might result in crippling the corps in the event of the officer or mechanic retiring or in any way discontinuing his connection with the National Guard.

This generous offer has been transmitted to Governor Whitman and Major General John F. O'Ryan, commanding officer of the National Guard. Both General O'Ryan and Major William L. Hallahan, chief signal officer, who had been urging the Legislature of New York to provide for the organization of an aviation corps, are very enthusiastic regarding the gift. This offer affords a start, and prompt action will be taken to send the officers to an aviation school for their course of training.



Realizing the necessity of having the militia aviation corps organized on a plan harmonizing in every possible way with the Army Aviation Corps, the Aero Club of America urged the militia authorities to invite the advice of the authorities of the War Department regarding the type of aeroplane to be acquired, nature of course of training, etc.

Thus both the National Guard and Naval Militia of the State of New York have been given the means with which to start the organization of aviation corps.

The Naval Militia received the flying boat and course of training for officers and mechanics offered by the Curtiss Aeroplane Company last June, and assigned to the First Battalion, of which Commander Charles L. Poor is the head. Ensign L. H. Harris, and Electrician Robert H. Kahl, of the First Battalion, who were assigned to go to the Curtiss School to train, are progressing fast. They are taking a very thorough course, so that they will be able to instruct others.

Lieutenant Frank Mathen, of the Third Battalion of the Naval Militia of New York, is also getting a course of instruction at the Curtiss School, at Buffalo. The Naval Militia of New York, therefore, has a good start, and General O’Ryan, head of the National Guard, has assured the officials of the Aero Club of America that he will immediately select four men to take courses of training at one of the leading aviation schools.

This offer was immediately followed by an offer from Mr. B. R. J. Hassell, of the Milwaukee Yacht Club, of a flying boat for the Naval Militia of Wisconsin. This offer of Mr. Hassell’s has just been transmitted to Governor E. L. Philipp, of Wisconsin, and Commander Theodore Werder, head of the Naval Militia.

Other recent subscriptions to the National Aeroplane Fund have been received from the following:

Mrs. Willard Straight.....	\$250.00
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Subscriptions to the National Aeroplane Fund now total \$37,001, as follows:

Cash subscriptions .....	\$21,501.00
Two flying boats and courses of instruction valued at .....	16,500.00
Total .....	\$37,001.00

Mr. Emerson McMillin, the Wall Street banker, will add a 10 per cent. bonus to all subscriptions up to the sum of \$500,000 sent into the National Aeroplane Fund.

Appreciated

Mr. George A. Gray, who recently participated in the manoeuvres of the Vermont National Guard, has received the following from Capt. Ira L. Reeves:

My dear Mr. Gray:  
Among the most pleasant of the many pleasing official duties I have had to perform in connection with Camp Governor Gates, August 2-11, 1915, is that of expressing to you on behalf of the commanding officer and the officers and men of the First Vermont Infantry, their most sincere thanks and deep appreciation for the most generous and instructive service performed by you during the period of the camp. Your flights and demonstrations were revelations to many of us, and there is absolutely no doubt but that your presence has aided greatly in arousing a strong local sentiment in favor of military preparedness in the line of increased aviation facilities, personnel and material.

In addition to appreciation of your professional qualities, I want to add that we have enjoyed your visit socially, and we will long remember your genial good nature and never ending patience in answering questions which to a less considerate person must have long since become intolerable bores.

In concluding I want to say a word about your mechanician, Mr. Reasor. He has been most attentive and pleasant, and has always seemed most deeply interested in the work you came here to perform.

With wishes for your continued success professionally, and personal welfare, I am,

Most sincerely yours,

(Signed) Ira L. Reeves,

Capt. and Adjutant 1st Infantry, V. N. G. Adjutant.

Not Appreciated

When the exhibition aviator lands from a flight and by way of adding a thrill to his performance tells the local reporters that his motor stopped as he was a thousand feet high, etc., etc., and causes an Associated Press dispatch to be sent telling the country that he escaped death, he does *not* help aeronautics, and he is digging a grave for his professional career. Looking back we find that the aviators who indulged in that kind of practice have had to retire, while the serious-minded, who sought to advance aeronautics are holding important positions in the prospering aeronautical industry.

The Aviators’ Summer Schedule at the Front

Up at 4 A. M., to bed at 10 P. M., with an afternoon *siesta*, is the aviator’s summer schedule at the front, according to a letter from one who is there.

Action begins at four, daylight, and ends at ten, when the sun is high and hot; begins again at five in the afternoon, and continues till dark. Of course there are exceptions, when aviators go out on raids. And the afternoon siestas are often interrupted by developments. But these incidents are expected, and no one minds them!

# THE NEWS OF THE WEEK

## P. C. Millman Flying at Plattsburg Manoeuvres

In spite of the almost impossible conditions P. C. Millman has been doing quite some flying in the Gallaudet tractor biplane at the business men's camp at Plattsburg, N. Y.

In three days he made over twenty flights, starting from the only available field (which is two and one-half miles from the camp) and flying over the manoeuvre grounds. In addition Millman has seven pupils at the camp, so that what with the demonstration and school work he is quite busy. A number of officers have enjoyed flights with him, among whom may be mentioned Captain R. C. Bowling.

## Art Smith in Iowa

Art Smith has been engaged by the management of the Iowa State Fair to show the people of that part of the country a little sample of real flying. He will show all his regular exhibits of loop-the-loop, side rolling loops, vertical drops and night flying with his machine blazing with fireworks.

## Curtiss Flying Boat Proves Great Attraction at Atlantic City

Among the many interesting attractions at Atlantic City are the daily flights made by Kenneth Jacquith in his Curtiss flying boat, with which he is doing passenger carrying work. Jacquith has carried hundreds of passengers during the season without accident.

## Niles to Fly at Richmond

Charlie Niles is booked to fly at the Virginia State Fair, October 11th to 16th. Niles, who will use his 90-h.p. Gyromotored loop the loop Bleriot, will give his usual program of thrills with which he is now thrilling the visitors to the Panama Exposition.

## La Q. Day Flies Over His Home Town

La Q. Day, pilot for the La Q. Aeroplane Company, gave a fine exhibition at Gibson City, Illinois, recently with his new Benoist tractor biplane. Rising to a height of 1,500 feet, Day circled around for over twenty minutes, going clear around the town, over the high school, from which he had graduated only two years ago, and finally landed on the spot from which he started.

Castori, the Cicero pilot, who was with Day, also made a very successful flight in his own machine in spite of a strong wind.

## New Cooper Flying Boat Tested

First trials of the new Cooper flying boat, constructed by John D. Cooper, at Bridgeport, Conn., were held last week and proved entirely satisfactory. The machine was simply tested for balance by Cooper, who found it planed satisfactorily. Further trials will be held during the next two weeks.

## Ernest V. Wilken With Maximotor Makers

Ernest V. Wilken, who was formerly associated with the Kirkham Aeroplane and Motor Co., of Savona, New York, as sales manager and also as Chicago agent for the Kirkham Motor in 1911-12, and more recently as sales manager for the Aeromarine Plane and Motor Co., of Nutley, N. J., is now associated with the Maximotor Makers, Detroit.

## Marblehead May Be Selected as Government Base

There is a persistent rumor that the United States government is seriously considering purchasing a large tract of land in the vicinity of Marblehead for an aeroplane base.

Naval officials have been in town for the past week surveying a large tract of property from State street to Fort Beach and the names of all property owners in Marblehead have been secured.

## New Sloane-Day Tractor Tested

The new 50 h. p. Sloane tractor constructed for Mr. Oveton Bounds of Madill, Oklahoma, was given some very successful trials recently at Bound Brook, N. J., by H. W. Blakeley. The machine is a small loop, the loop tractor resembling the one used by De Lloyd Thompson.

Another and larger military tractor biplane is now nearing completion at the Sloane-Daniel factory at Bound Brook which will be equipped with one of the new 130 h. p. 6 cylinder vertical Hall-Scott engines. Trials of this machine will be awaited with interest.

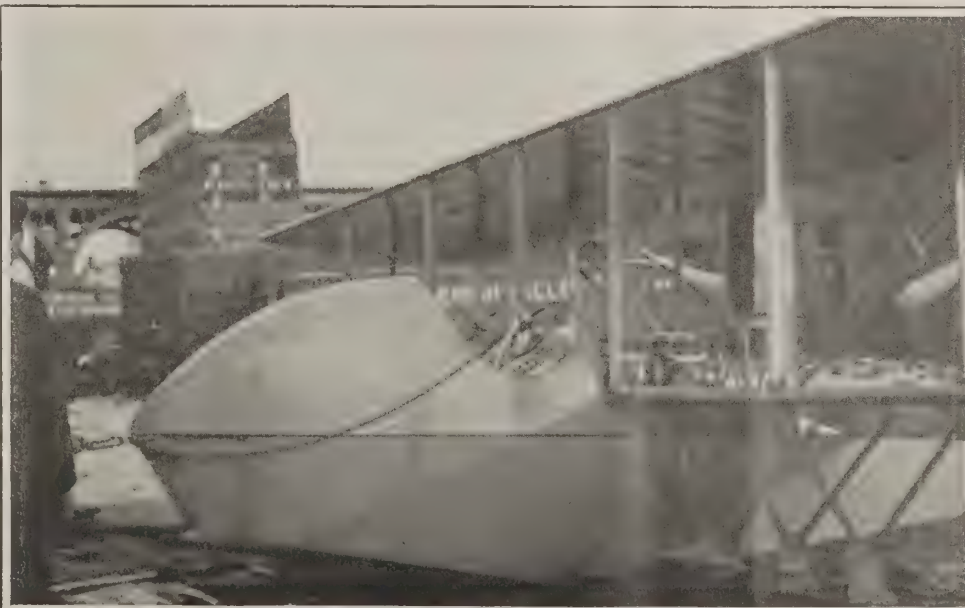
## Wichita Aero Club Purchases Balloon from Honeywell

The Wichita Aero Club on August 12th closed a contract for the purchase of the balloon "Wichita."

The deal was made with Capt. H. E. Honeywell, of St. Louis, who will probably be the pilot of the big gas bag when it starts in the National Balloon Race from Wichita during the fair next October. The balloon, which has a capacity of 40,000 cubic feet of gas, cost the Aero Club \$850. It will be supplied by the French-American Balloon Company, of which Capt. Honeywell is president.

The committee appointed to buy the balloon consists of Delos P. Woods, Harry Gee, H. S. Sladen and E. F. McIntyre.

The new Wright long-hulled flying boat belonging to the Hudson Wright Company. This machine has been making flights over the Hudson from the Hudson-Wright Company's pier at 131st street piloted by Messrs. Rhinehart and Gaines. Note the steel planing fins on the side of the hull just in back of the first step, also the position of the seats and the mounting of the motor, which is fitted with a Delco electric starter. We are indebted for this picture to Mr. Henry S. Villard, the donor of the Villard model trophy.







P. C. Millman flying the Gallaudet biplane at the Plattsburg manoeuvres under difficult conditions, which necessitated his dodging over a building and in between trees on each landing.

#### Aeroplane Mail to be Tried in Milwaukee.

Mail service by aeroplane is to be tried in Milwaukee during the state fair.

Arrangements are being made with the postoffice department heads in Washington and Postmaster Frank B. Shutz whereby visitors to the fair can mail souvenir post cards or letters in an aeroplane office on the fair grounds, and have them make the first lap of the journey to their destination, from the grounds to the Milwaukee office, by aeroplane.

The plan will be carried out by the Patterson aviators, who have been billed as a state fair attraction. The operator of the aeroplane will be regularly sworn in as a United States mail carrier, for the aerial service. This will bring him and his aeroplane under the protection of the United States postal laws.

All mail sent from the grounds by this service must be properly addressed and carry sufficient postage. It will be taken to the post office in the aeroplane flying hundreds of feet above the city. Employees at the office, in addition to the usual cancellation stamp bearing post office and date, will mark it, "Wisconsin's First Aeroplane Mail, Milwaukee, Wis." A special stamp for this work is being prepared now.

#### Curtiss Company Gives Week's Salary as Gift to Employees.

The Curtiss Aeroplane Company, of Hammondsport, had all the men in the employ of the Hammondsport shops sign the pay roll recently for two weeks' pay. One of these was the men's due, the other week is a gift of the company. Over 500 men were affected, approximately \$8,500 being distributed.

The Curtiss Company announces it assumes this means to show its appreciation of the fidelity, application and industry on the part of its employees. The gift included all employees from the apprentice to the superintendents.

#### Elling O. Weeks Flies at Eagle Grove.

At Eagle Grove, Ia., Elling O. Weeks last week made three flights. He carried passengers each time. He flew to Holmes with Miss Joise Uhr as a passenger and returned after dinner with his cousin, Miss Ellen Erickson.

He went up also with Harry Noel, but the crank shaft on the engine broke when he was up about 500 feet, so he immediately volplaned to the ground.

#### Aeroplane Mail Service

Aeroplane mail service between Eureka and Redding, California, is a plan now attracting attention not only from Uncle Sam's post-office department, but from postmasters and students of better mail service over the entire country, and is given cognizance in *The Literary Digest*. The Redding-Eureka route is selected as one of few shining examples of poor mail service which might be remedied by birdmen and is proposed as a good place for Uncle Sam to begin his experiments.

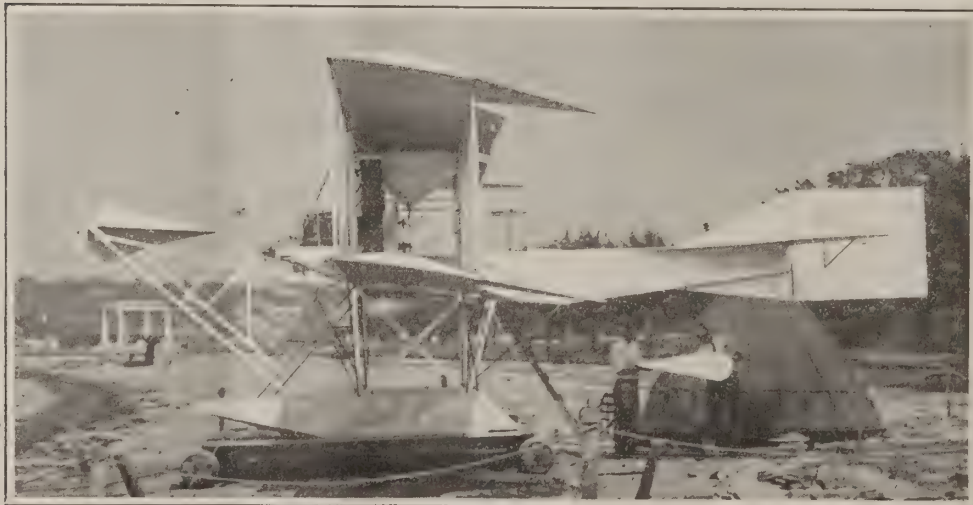
In the course of its discussion of this subject, the *Literary Digest* quotes from an article by Caroline Cross in the *Postmasters' Advocate*, published at Washington, D. C., as follows:

"An emergency service could be used to supply points in the Rocky Mountain regions where other methods of transportation might be temporarily out of commission by reason of washouts, snow-slides, etc., a good example of which is Silverton, Colo. If aerial mail routes could be established between the towns of Redding and Eureka, California, the most surprising reduction in time for delivery between the latter places and Portland, Oregon, could be accomplished. Now a letter leaving Portland on Monday does not reach Eureka until the following Thursday, yet the stretch causing the delay is approximately 95 miles in length.

"Temporary service might also be used to great advantage, according to Mr. Steward, in reaching isolated postoffices during the winter months in the mountain regions, as it frequently happens that many such offices are without communication for periods of several weeks at a time."

#### De Lloyd Thompson to Fly at Columbus

De Lloyd Thompson is booked to fly at the Columbus fall festival, September 15, 16, 17 and 18. He will use his 90 h. p. Gyro motored tractor biplane and will loop the loop over the State House dome in addition to giving his regular program of spirals, upside down flights and falling leaf glides.



The Willoughby Hydroaeroplane model F, tractor type. It is equipped with an 80 h.p. motor. It has a span of 41 ft., Cord 5 ft., weight 1,400 lbs. and weight of Catamaran floats 200 lbs. This machine went through its first tests recently at Newport, R. I.

### Bud Cary Has Rough Cross-Country Trip.

Bud Cary, who recently filled a successful date at the Dorchester County Fair, flew cross-country from Salisbury to Cambridge a distance of 31 miles in 26 minutes which was quick traveling and gives a good idea of the conditions under which Cary was flying.

Cary left Salisbury in his machine at 10 minutes to one o'clock and followed the line of the railroad as far as Mardela, and then followed the course of the State road the remainder of the distance, reaching Cambridge at 13 minutes after one o'clock.

Cary stated that the trip was one of the most thrilling and exciting that he has ever taken during the time he has been an aviator.

Previous to this Cary had flown cross-country from Tasley, Va., to Pocomoke, Md., 29 miles in 23 minutes. He used a Thomas biplane on both flights.

### Chauncey Redding Forced to Alight on Beach.

The crowds at Revere Beach recently witnessed a thrilling flying exhibition, which was intended for the gathering at the Hull "gala day" celebration on the South Shore. J. Chauncey Redding, the Melrose aviator, and Phil Bulman, a parachute jumper, started from the old Saugus race track for Hull to give an exhibition. They had been in the air only a few minutes when Redding scented engine trouble, and he cut back and forth over the sands at Revere, testing his engine before attempting the flight across the bay.

Finally, while hovering near Point of Pines, he was forced to volplane. He had three choices for a place to alight, the water, the boulevard and the beach. His aviator's license gave him permission to alight only on the first named, but his common sense told him that the best place was the sandy beach, even if it was against the law there.

Soon after they had settled on the sand a motorcycle officer arrived and told them that they would have to go to the metropolitan police station and explain why they had landed on the forbidden sand. But he did not make them walk. He commandeered an automobile that was passing and Redding and Bulman went to the station and conversed with Chief West.

The chief decided that Redding had probable cause for landing on the beach, but informed him that if he did it again he might be arrested. By the time he had repaired his craft it was too late to make the trip to Hull and it was called off. It was fortunate for Redding that the tide was out when he decided to make for the beach. Had the tide been at its flood he would have experienced some difficulty in finding a dry spot.

### A New Biplane to Make Its Appearance

A new type of military biplane will soon make its entrance into the aeronautical world. The trial flight of the first of a series of new aeroplanes, to be known as the ABC Aeroplanes, will take place in a few weeks, and the indications are that the new comer will most auspiciously break the ice of actual flight for several machines now under construction, and others projected by the ABC Aviation Co. Machines now under way, other than the one mentioned, are an ABC Exhibition Biplane, an ABC Exhibition Biplane (tractor) and an ABC Monoplane Flying-boat.

The initials ABC signify firstly the simplicity which will be a prominent characteristic of these machines and secondly the names of those engaged in their construction and exploitation, viz., Mr. Robert S. Ament, the prominent newspaper artist, who will act as business manager, and Messrs. John Carisi and Vincent J. Buranelli, who do the designing and constructing. Mr. Carisi is an experimenter of note, as well as a

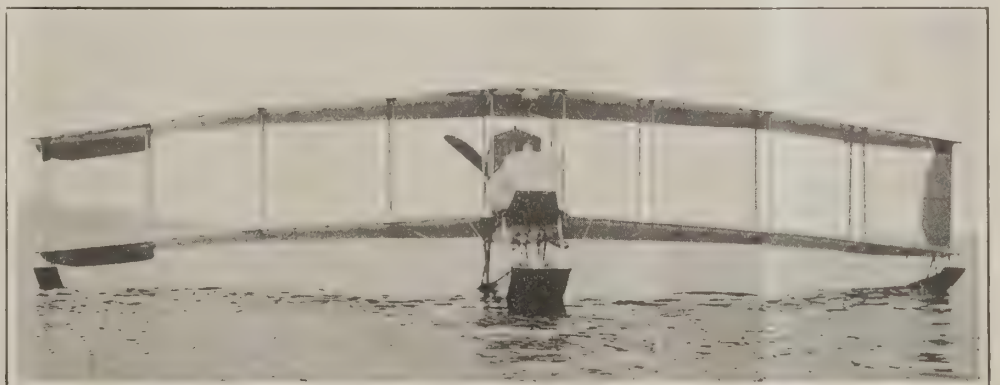


Astor's Burgess-Dunne Seaplane flying on its trial flight over Marblehead.

motor expert, and has built an aeroplane machine-gun especially for the machine coming out.

The machine is of the pusher type, and thus has an excellent radius of vision as well as gunfire. Its construction embodies several advanced developments, notably a system of panel construction. It is of the deck-and-a-half type—roomy car covered with duralumin—automobile finish.

Front view of the 140 h.p. Sturtevant Engined Burgess-Dunne Seaplane, built for Vincent Astor.





## THE SHAW FLYING BOAT

By WALTER H. PHIPPS



THE Shaw Flying Boat illustrated in the accompanying scale drawings differs slightly from the first model shown in the photographs, in that it has been especially designed to meet the requirements for a flying boat capable of quick rising from the water and affording the maximum protection for the pilot and passengers as well as adapting it for offensive work.

To this end the nose of the boat has been made quite long to carry the engine on front and at the same time aid in making the craft more seaworthy, while the short upturned tail is designed to facilitate quick rising by eliminating tail drag in rising.

Having the engine placed forward in the hull, the Shaw flying boat more closely follows usual motor boat practice than other machines of this type, hence it should make an exceptional appeal to speed boat enthusiasts, who are more likely to see in it their real conception of a motor boat fitted with wings than is the case with the average flying boat carrying the motor slung up over their heads. Of course, this presents the disadvantage of producing a low center of gravity, but this could probably be overcome by placing the motor on top of the hull, shielded in, of course, and the fitting of larger controls, placed well out, so as to afford the maximum leverage and control.

### Hull.

The hull is of the single-step type, built up of two-ply mahogany and canvas, copper-riveted, over a framework of ash and spruce ribs. The method of securing the ribs and planking to the hull longitudinals is shown in one of the sketches. The planing bottom is four feet wide and V-shaped, to give greater strength and permit of starting and alighting in rough water.

The nose of the hull has been rounded off and stream-lined

in such a way that it entirely encloses the motor and at the same time affords the maximum protection from wind and spray. An especially neat arrangement is the way in which the radiator is shaped to fit flush around the top of the hull, just in front of the main planes, as shown in the drawings and photographs. Immediately in back of the radiator the hood is given a slight curl up to form a sort of cowl in front of the passenger's and pilot's cockpits. The front cowl or dash forms a convenient mounting for a machine gun, as shown in the drawing. The rear of the hull is very short, measuring only 9 feet 10 inches from the step to the stern, and is arched up considerably, with the idea of eliminating tail drag and permitting quick rising from rough water.

### Planes.

The planes are of the double surfaced laminated rib type, having the front beam act as the leading edge. They are covered with Irish linen and doped with Emaillite. The curve of the wing and its angle of incidence with corresponding centers of pressure at varying angles and speeds is shown in one of the accompanying sketches. Both planes are built in sections, the top one having a span of 42 feet 4 inches, the lower one a span of 34 feet 4 inches. The chord and the gap is 5 feet 6 inches.

All the uprights, like the main beams, are built up of laminated ash and spruce strips and are shaped to the section shown in an accompanying sketch. At their ends they are tipped with special malleable aluminum pieces which fit in specially designed quick detachable sockets, also of the same material. In the center the two planes are separated by tubes arranged V-fashion, which also help to serve as an anchorage for the propeller shaft and its chain transmission.

(Continued on page 601.)

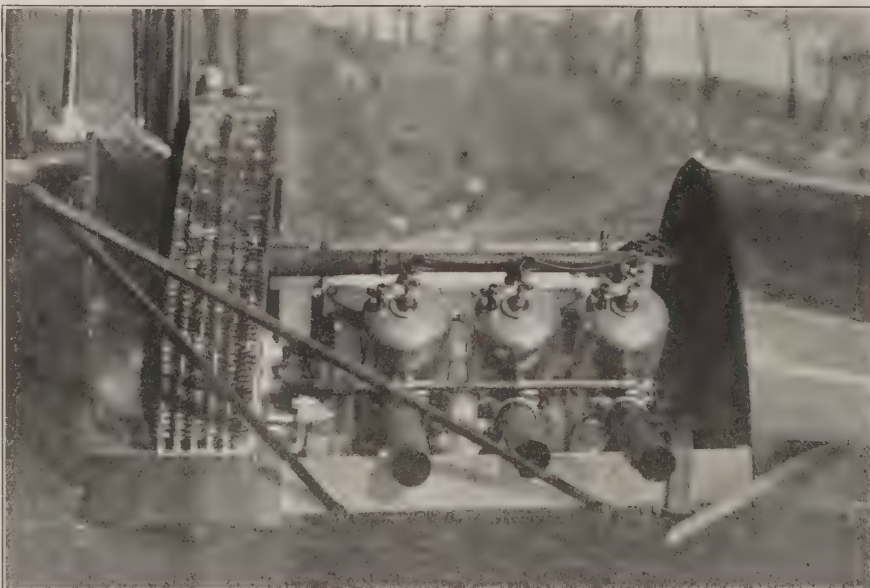


Illustration showing the installation of the 75-90 h.p. Johnson two-cycle motor in the Shaw Flying Boat.





# THE NEW SIX CYLINDER HALL-SCOTT ENGINE

## TYPE A-5 WITH OVERHEAD CAM-SHAFT

By NEIL MacCOULL, M. E.

The Hall-Scott Motor Car Co., of San Francisco, has been manufacturing aeroplane engines for the last seven years, and is consequently one of the pioneer manufacturers in this field. Their chief output, however, has been railway motor cars propelled by high power internal combustion engines. These cars have found ready sale in the West, and the experience gained in this field has been of great value in their work with aeroplane engines. The railway motor car business, which is well established and profitable, has allowed them to go ahead with their aeroplane engines under the conviction that aviation would at some time be on a firmer footing than it has been in the past.

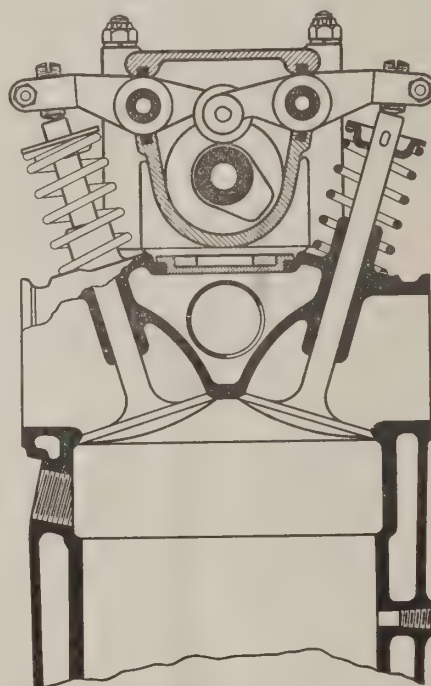
Accordingly this branch of their business has been developed and built up as actual business conditions warranted, their designs keeping pace and advancing with the development of the aeroplane in this country. As the advance of the aeroplane was slow, there was sufficient time for careful experimental work on the engines, and money has not been spared in an attempt to bring these up to a high standard.

Starting with a four-cylinder 30 h. p. water-cooled engine, known as "Type A," the Hall-Scott Company has built and marketed in the past four different aeroplane engines, each new type showing a larger engine, with correspondingly greater power than the one preceding it. At the beginning of this year a new engine was built, designed especially for use in military tractor aeroplanes. The first of these engines to be completed went through the regular course of factory tests at the company's plant, and was then thoroughly tested out under flying conditions in the Glenn L. Martin military tractor hydroaeroplane (illustrated on page 569 of last week's AERIAL AGE), where it gave remarkably satisfactory results. Not content with this, the manufacturers conducted an eight hour running test under full load at their plant under the supervision of Hildreth & Company, well known New York consulting engineers. The average speed of the engine for the eight hours and ten minutes of test was 1230 r.p.m., and the power delivered at this speed was 142 h. p. The engine consumed 10.25 gallons of ordinary garage gasoline per hour, and 0.50 gallons of oil during the same length of time. This is equivalent to only 0.45 lbs. of gasoline and 0.026 lbs. of oil per horsepower hour.

At first glance this new "A-5" reminds one of that famous

German engine, the Mercedes, because of its six vertical water-cooled cylinders, and overhead camshaft and inclined valves. Closer inspection of the design shows, however, that this is by no means a copy of the Mercedes, for many of the details are much more refined.

One of the most noticeable details is the very neat way of enclosing the cams in an oil tight casing. Though the cams run in oil, there is no leakage even while the engine is running. Without question the whole arrangement of the valve mechanism is the most excellent feature of this engine. The valves, which have the large diameter of half the cylinder bore, make it possible to secure a high volumetric efficiency and consequently high m. e. p. The valve is very light and has the

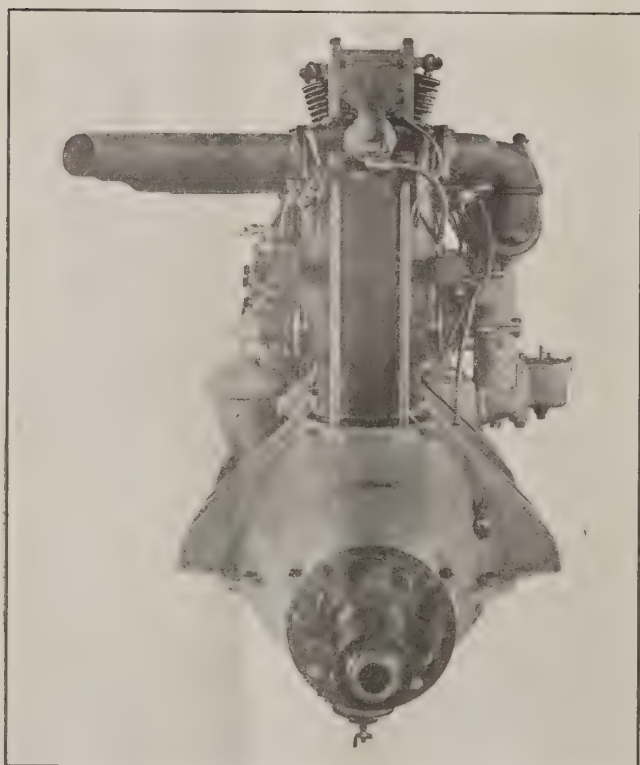


Section of cylinder head showing valve mechanism with enclosed cams operating in oil. The water outlet is shown between the valve passages, with an opening toward the exhaust valve.

properties that are sought for in very high speed engines where the service is unusually severe. However, this is not a "high-speed" engine, the propeller being directly connected to the crank-shaft, and the stresses on the valve mechanism are consequently so much less than is possible with this arrangement that valve trouble should be practically unknown. The importance of this is appreciated when one realizes that the most unreliable parts of aeroplane engines in the past, excepting the ignition system, have been the valve mechanisms.

The camshaft, which is supported by four large bearings in the aluminum housing which is bolted to the top of the cylinders, is driven through bevel gears from a vertical shaft at the rear of the engine. This vertical shaft also drives the centrifugal water pump and the two Bosch magnets. At the rear end of the camshaft is a small air pump and a connection for a tachometer.

The six cylinders are cast individually with integral jackets and heads. A very large water space around the valves insures ample cooling. It is almost unnecessary to state that great care is taken in locating the cores in these castings, and in their machining so as to be sure of uniform thicknesses of walls. Lugs are cast on the sides of the cylinders near the top and are machined where they come in contact with the adjacent cylinders, so that when the long bolts which hold the cylinders to the crankcase are tightened up against washers supported by these lugs the cylinders are braced against each other like a solid block and add considerably to the rigidity of the engine.



Front end of the new A-5 Hall-Scott engine, showing the small head resistance offered by this type of engine.

The cylinders are finished with a dark blue baked enamel which makes a fine contrast with the aluminum crankcase, camshaft-housing and intake manifold.

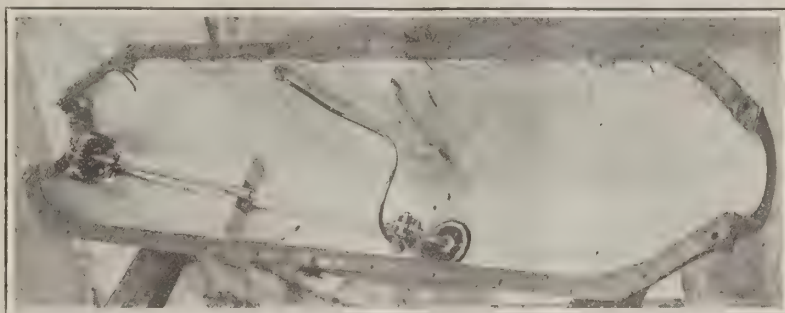
The water inlet to the cylinders is quite conventional, but the outlet is unusual. Brass tubes pass through the water spaces at the tops of the cylinders. Water enters each of these tubes from its cylinder through a hole cut in the side of the tube toward the exhaust valve, with the result that there is a more rapid circulation of water past this hot part. By properly gauging the size of each of the six holes the circulation of water may be so regulated as to keep all cylinders at an equal temperature. Connections are made between cylinders by short lengths of rubber hose, all water outlets being connected in series.

The pistons are cast from the same semi-steel mixture as the cylinders, and are unusually light. The wrist-pin bosses are located nearer the lower end of the pistons than usual in order to keep the heat of the piston head away from the wrist-pin bearings and the upper end of the connecting rod as much as possible. Another advantage is that side thrust on the pistons is taken at the point where the pistons fit the cylinders best.

The crankshaft is of large diameter, and is supported in seven bearings. It is made from a billet of chrome nickel steel which is first drilled and then roughed out with crank-pins in one plane. The shaft is next heated and offset so that the cranks are 120 degrees apart. After this the shaft is straightened, turned down to a grinding size, heat treated, and then finished accurately to size. The propeller end of the shaft is provided with two thrust bearings, one for pull and the other for push. The flanges which drive the propeller are held to the shaft by 2 keys, the propeller being clamped between these flanges by six through bolts. One of these flanges is fitted to a long taper on the crankshaft. The other is splined to the hub which is solid with the first, making it possible to remove the propeller without disturbing the bolts.

The main bearings are supplied from the lower side by oil under high pressure; no splash being used. The oil that collects in the sump is drawn through a strainer and pumped to a jacket surrounding the intake manifold, thus cooling the oil somewhat, and warming the gasoline mixture, a feature covered by this company in patent No. 632,919. The oil then passes to the main distributor pipe in the crankcase, which leads to all main bearings. A by-pass at one end of

this pipe can be regulated to provide any pressure required, the surplus oil being returned to the sump. The oil level may be easily read by an indicator at the top of the engine between the third and fourth cylinders. This indicator is simply a small ball attached to a float in the crankcase by a stiff wire, passing through one of the long studs holding the cylinders. The pump is at the lowest point of the sump, and is always submerged in oil. It is driven by a shaft with bearings in the sump and so geared to the crankshaft that when the sump is removed the gear on the pump shaft is disen-



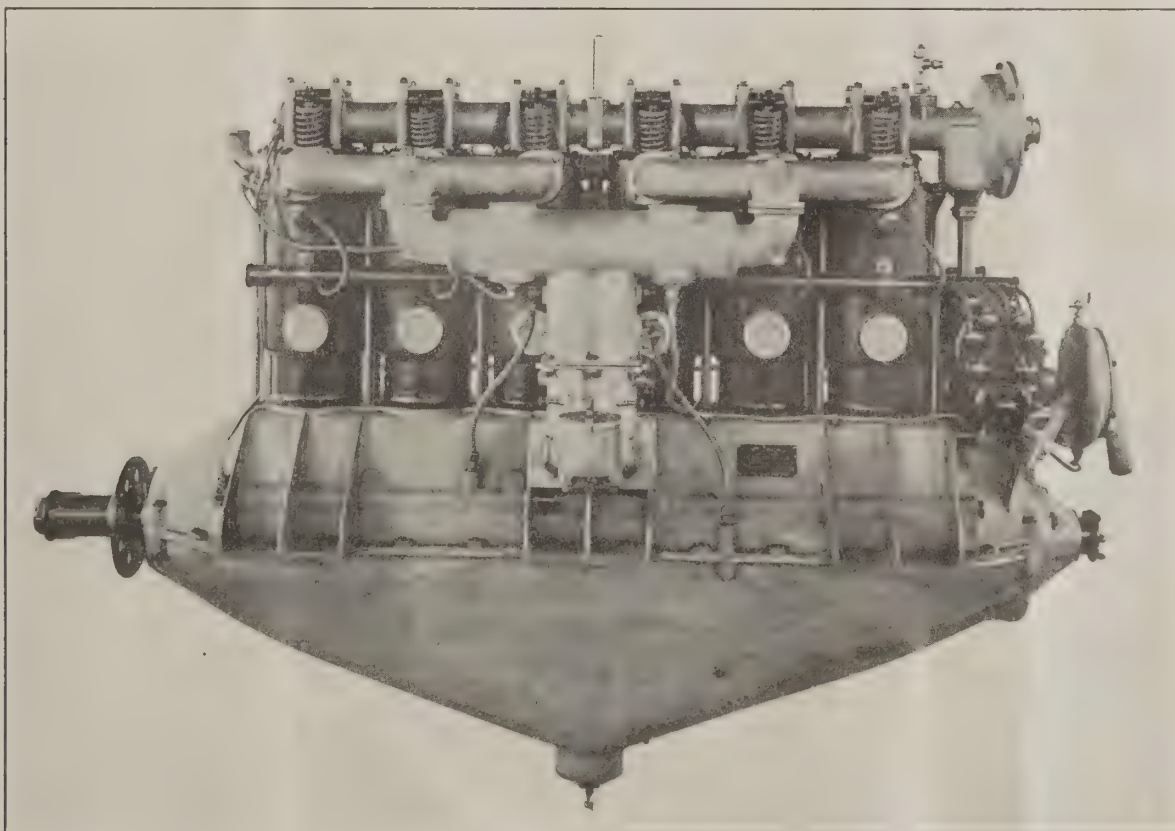
Sump with oil pump at its lowest point, driven by a gear which meshes with another gear on the crankshaft when the sump is in place.

gaged from the driving gear, and the pump with its shaft remains in the sump. No oil connections have to be broken, either.

Oil is supplied to the individual cylinders by an independent system, which consists of a small six-plunger pump mounted between the magnetos. The stroke of each plunger may be regulated, so it is possible to supply each cylinder with the exact quantity of oil desired.

Inspection of the specifications of this engine shows the use of very high grades of steel. So much heat treated chrome-nickel and tool steel is used as to lead one to expect that the quality of materials is as excellent as the design.

The cylinders have a bore of 5 inches and the stroke is 7 inches. The engine is rated at 125 h. p., though the horsepower curve shows an overload capacity of 150 h. p. The engine weighs about 525 lbs., without water or radiator, and has a length of 51 inches between extremities of the crankcase.



Intake side of the new six-cylinder Hall-Scott. Notice arrangement of the double-jet Zenith carburetor and the intake manifold, which is both oil and water jacketed. Provision is made for supplying warm air to the carburetor.





# FOREIGN NEWS

Edited by L. d'Orcy



## AUSTRIA.

Austrian aeroplanes repeated, on August 24, their raid on the Italian aerodrome, at Assovitz, on which they dropped sixty bombs, causing considerable damage. The Austrian squadron, notwithstanding its audacity and despite the fact that it was subjected to the usual fire of the enemy's anti-aircraft guns, returned untouched.

On August 25 an Austrian aeroplane flew over Brescia and, evading the fire of the Italian anti-aerial guns, threw down four bombs, killing six persons and wounding several others—all of them civilians.

## FRANCE.

The French aeroplane fleet has resumed its bombing raids into German territory, meeting in every instance with marked success. In one case sixty-two French aviators took part in an attack on an arms factory in Rhenish Prussia, and in another instance sixty airmen, including British army and navy fliers, and Belgian aviators, participated in a raid on Mont Hulst forest in Belgium.

Still other raiding parties, apparently all French, dropped bombs on strategic points behind the German lines, from near Arras to the Woivre district, northeast of St. Mihiel.

The French war office describes these raids as follows:

"During the day of Aug. 24 a French aviator threw down bombs on the railroad station at Offenbourg, in Baden, seventeen miles from Karlsruhe. At this point there is an important railroad junction in the Grand Duchy.

"On Aug. 25 an aerial squadron, composed of four groups and including a total of sixty-two aviators, flew over the heights of Dillingen. Here there is a factory where shells and armor plate are made. The location of this plant is north of Sarrelouis, in Rhenish Prussia, thirty miles south-east of Treves. The aviators threw down with precision 150 bombs, thirty of which were of large calibre.

"On the same day our aviators bombarded the German encampments at Pennas and Baussant, in the Woivre, where they started a fire. The station and the bivouacs of the Germans at Grandpre Chatel, Cernay, and Fleville, in the Argonne; the station at Tergnier (near St. Quentin), the aviation sheds of Vitry (east of Arras), in Artois, and the station at Boisieux (south of Arras) have also been bombarded by our aviators.

"A bombarding expedition, arranged by the French and British naval and the French, British, and Belgian army aviators, including in all sixty aeroplanes, set forth to the Mont Hulst Forest, where they started several fires. Every aeroplane came back home.

"On the night of the 25th-26th our aviators dropped 127 bombs on the Noyon station (northwest of Soissons)."

The German War Ministry gave the following version of the raid on Dillingen:

"Two enemy air squadrons, on August 25, dropped bombs in the Saar Valley, both above and below Saarlouis. Several persons were killed or injured. The material damage caused was not important.

"The night before last the squadrons were successfully attacked at their base at Nancy by our airmen.

"The enemy paid for his exploit by losing four aircraft. One fell to earth ablaze, near Bolzhen. The pilot and observer were killed. One fell into our hands near Romilly undamaged, and its occupants were made prisoners. The third was obliged to land near Arracourt, north of Luneville, by a German aviator right in front of the French lines. Afterward it was destroyed by our artillery. The fourth landed within range of our anti-aircraft guns, near Moevrons, south of Nomeny, behind the enemy front."

That the raid on Dillingen only seems to be the forerunner of other more important aerial operations of the French, is the assumption borne out by a dispatch to the New York Times, in which its correspondent described a visit to a great aeroplane base of the French Army, apparently close to Nancy, where he saw a countless number of aircraft and witnessed the impressive start and return of eighty-four aeroplanes, comprising four squadrons of twenty aeroplanes each, led by a larger "hawk." Nancy is only fifty miles, as the crow flies, from Saarlouis, and Dillingen.

## GREAT BRITAIN.

On August 12, Flight Lieutenant Edmonds, R. N. Air Service, while flying over the Dardanelles in a seaplane, sighted a Turkish transport carrying troops. Making straight for his quarry, he flew low enough to be able to drop a heavy bomb full on the deck of the vessel.

The resulting explosion split up the transport, which immediately sank. All the troops on board are believed to have been lost.

Another submarine has met its fate at the hands of an airman, who destroyed it with a couple of well-placed bombs.

This momentous event is told in an official note issued on August 26th, by the British Press Bureau in the following terms:

"The Secretary of the Admiralty announces that Squadron Commander Arthur W. Bigsworth, R. N., destroyed, single handed, a German submarine this morning by bombs dropped from an aeroplane. The submarine was observed to be completely wrecked and sank off Ostend.

"It is not the practice of the Admiralty to publish statements regarding the losses of German submarines, important though they have been, in cases where the enemy has not other sources of information as to the time and place at which these losses have occurred.

"In the case referred to above, however, the brilliant feat of Squadron Commander Bigsworth was performed in the immediate neighborhood of the coast in occupation of the enemy, and the position of the sunken submarine has been located by a German destroyer."

Although this is the first authenticated report of the actual destruction of a submarine by a seaplane, there have been several instances where aircraft bombs have damaged, if not sunk, underseas craft.

On May 31 the German Admiralty announced that a German seaplane had encountered a Russian submarine and had sent it to the bottom with a bomb.

On July 1st the Italian Minister of Marine issued a note stating that the French Sub-Lieutenant Roullier had dropped three bombs on the deck of the Austrian submarine U-11. Later advices from Geneva said that the submarine had been towed into an Austrian port in a damaged condition.

On August 19th the Turkish War Office stated that a submarine of the Quadruple Entente had been sunk in the Dardanelles by a Turkish aeroplane. This report was neither conformed nor denied by the Allies.

How the code of chivalry is ruling the battles of the air is told by a correspondent of the International News Service:

"Though it has been repeatedly stated that chivalry does not exist in this war," said a British aviator, "this does not apply to the British and German aviation branches. Whether it is the individualism of our work and its novelty, or whatever it is that is responsible, something of the old spirit of knighthood maintains among the flyers of the air.

"When a British aviator has to descend in the German lines, whether from engine trouble or because his engine or his plane has been damaged by anti-aircraft gunfire, the next day the Germans report to us his name and whether he survived, and if so, whether he is wounded. We always do the same. It has come to be a custom."

The reports are made in a manner worthy of airmen, and they are the only communications that ever pass between the two foes which watch for heads to snipe at from their trenches. What is called a "message bag" is dropped over the British lines by a German, or over the German lines by a British aviator—sometimes when he is in the midst of bursting shells from the anti-aircraft guns. Long streamers are attached to the little cloth bag. These, as they flutter down to the earth from a height of seven or eight thousand feet, attract the attention of soldiers in the neighborhood, and they run out to get the prize when it lands.

It is taken to battalion headquarters, which wires the fact on to the aviation headquarters, where the fate of a comrade may be known a few hours after he has left his home aerodrome; and in another few hours someone in England may know the fate of a relative.

Sub-Lieutenant John McLarty, of the Royal Naval Flying Corps, was killed on August 25, while flying a seaplane over Southampton water. The machine met with a mishap and McLarty fell out, dropping 2,000 feet.

## GERMANY.

Another Zeppelin airship (probably the LZ-44) was launched on July 30 at Friedrichshafen, on Lake Constance. This airship is reported to differ considerably in shape from previous Zeppelin practice, the stern of the hull being blunt instead of being pointed. The airship possesses two armored cabins, containing small guns, and has three triple-bladed propellers, which give a considerable speed.

According to the *Petit Parisien* the Germans have imposed a new fine of \$1,000,000 on the city of Brussels on account of the destruction of the Zeppelin LZ-38 in her shed at Evere, outside of Brussels, by two British airmen.



A German aircraft bomb dropping near a British seaplane mothership, off Cuxhaven. Photo Steggle's.





# MODEL NEWS

Edited by WALTER H. PHIPPS



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### Aero Science Club

By G. A. Cavanagh

The following clubs were announced as branches of the Aero Science Club of America, at the last meeting:  
The Long Island Model Aero Club, Cypress Hills, Long Island.

The Bay Ridge Model Aero Club, Bay Ridge, Brooklyn, N. Y.

The Buffalo Model Aero Club, Buffalo, N. Y.

The Milwaukee Model Aero Club, Milwaukee, Wis.

The Summit Model Aero Club, Summit, N. J.

The Detroit Aero Research and Model Club, Detroit, Mich.

The above named clubs have willingly affiliated with the A. S. C. for the purpose of furthering the interest in model aeroplaning and aviation in general. A national organization is the object of the A. S. C., and it extends an invitation to all clubs that have not yet affiliated to do so to help promote the cause for which it was established. Mr. Schultz was appointed chairman of the Publicity Committee and will be assisted by Mr. Chas. Wm. Meyers, Jr., and the Secretary.

Mr. Thiel, a member, gave a rather interesting talk on one of the successful compressed air motors used by German model flyers. The model in which this motor was used made a remarkable flight of 3,000 feet.

Membership certificates are now being prepared and as soon as ready will be sent out to all members of the A. S. C. and its affiliated clubs.

The Summit Model Aero Club was to have flown August 29, for the Villard Trophy and the Aero Club of America prizes, but in view of inclement weather the contest was called off until August 31, the last day for flying in this event.

For further particulars address the Secretary, 229 West 39th Street, New York City.

### Aero Canoe

By William H. Hodgins

On May 23d last, we gave my canoe her trials with the rebuilt engine. At first all went well; the engine ran finely and we made good speed, but later the engine missed considerably owing to a weak set of batteries. Even with the engine running poorly we attained an ten-mile-an-hour speed, as shown in the photograph.

In the accompanying drawings, for which I am greatly indebted to Mr. C. W. Meyers, one may see the main details at a glance. The standard is made of steel tubing braced by its triangular construction. At normal speed the engine develops about 3 h.p. and drives (directly) a three-foot by four-foot pitch propeller.

The rudder is held in place by a bracket made of one-eighth by one-half inch tempered steel straps and is clamped on the gunwale at B by bolts.

The unique part of the whole apparatus is that it only requires six bolts (including rubber bracket clamp) to hold it on the canoe. Two bolts hold the long tubing to the gunwales and two clamp the cross bar of the standard to the stern seat. The standard, including engine and the rudder,



with its bracket, may be removed by one person in about one minute by simply taking out the said six bolts. The novelty of this is that the canoe can be paddled or "motored" at leisure and it does not mar or break the canoe anywhere.

At present 10 to 14 miles per hour is the maximum speed, but by the end of the summer we shall have traveled some 100 miles and a greater speed is expected, for the new parts will have been worked in and all the present stiffness overcome.

A scene at the Aero Club of America's National Model contest at Garden City, August 22nd, showing some of the competitors getting their models ready. On the right of the picture may be seen Mr. Charles V. Obst, president of the Aero Science Club, second place winner, getting his model wound up, assisted by Mr. T. D. Gardner and Baron L. d'Orcy, two of the judges. We are indebted for this excellent picture to Mr. Henry S. Villard, the donor of the Villard Trophy, which is to be held by the winning club.







Aeronitis is a pleasant, a decidedly infectious ailment, which makes its victims "flighty," mentally and physically. At times it has a pathologic, at times merely a psychologic foundation. It already has affected thousands; it will get the rest of the world in time. Its symptoms vary in each case and each victim has a different story to tell. When you finish this column YOU may be infected, and may have a story all of your own. If so, your contribution will be welcomed by your fellow AERONUTS. Initials of contributor will be printed when requested.

#### No Jim Crow Law Needed.

Sandy Hoyle, negro janitor of the *Advocate*, listened to a discussion by the foremen and the intelligent compositor on the commercial possibilities of the aeroplane. Sandy seemed deeply interested, but at the close of the conversation he shook his head solemnly and said:

"White folks may do great things with them flying machines, but one thing I knows for suttin—they won't never need no Jim Crow cars on 'em."

#### Serenade.

By Walt Mason

O come, my love, for the world's at rest, and the Sun's asleep in the curtained West, and the night breeze sighs from between the stars, and my airship waits by your window bars! We'll sail to the sea of the waveless wind, we'll leave the earth and its dross behind, and watch its light from the cloudy heights; O come, my love, on this best of nights! O come, my love, from your bower in haste, let us trim our sails for the ether waste, away, away, where the weary moan of the workaday world is never known; where the only track is the track of winds that the sky lark leaves when it soars and sings! So come, my love, ere the night is old, and the stars have paled, and the dawn is cold; the ship can't wait for its precious freight, for it's costing a dollar a minute, straight.

#### High Flyer.

Aviator is going to marry a society girl. His experience qualifies him to enter the highest social circles.

The hydroaeroplane will never be safe if the operator tries to think how it is spelled while he is running it.

#### Hint to "War Party" in U. S.

German Paper Says New York Is in Submarine Reach.

London, June 24.—The Exchange Telegraph correspondent at The Hague sends a telegram received from Munich concerning an article published by the *Neueste Nachrichten* of Munich, commenting on the voyage of a German submarine from Wilhelmshaven to the Dardanelles, a distance of about 4,500 miles.

The paper points out that the distance from Bremen to New York is only 3,600 miles and expresses the hope that this submarine exploit "will make the war party in the United States think twice."

Another expression of humor is the prompt effort of some naval authorities to convince the country that submarines, which have already traveled from Wilhelmshaven to the Dardanelles, a distance of 4,500 miles, could not travel from Bremen to New York, a distance of only 3,600 miles.



SCIENTIFIC FARMING

(Courtesy New York Times.)



**Another One-Man Triumph.***(The New York Times.)*

Probably it was luck about as much as skill that enabled Squadron Commander Bigsworth to write his name beside that of Lieutenant Warneford, high in Great Britain's annals of the war. The Lieutenant drove an aeroplane above a Zeppelin and dropped upon the larger aircraft a bomb that sent it, with all its crew, crashing to the ground. The Commander's achievement was of like sort in that he, too, dropped a bomb from an aeroplane, but it was different in that his target was a submarine. The likeness reappears in the fact that the submarine, when struck, went to the bottom with all on board. It and they will be seen no more.

The deeds of both men, of course, will be acclaimed as glorious by the Allies and their friends. As exemplifying courage and success they deserve praise from the military point of view, and will get it, but—well, one need not be a sentimentalist of the most sickly sort to regret the existence of conditions that compel brave men to win victories such as these, or a "sissy," collegiate or other, for hoping that the Warnefords and the Bigsworths of all the nations may soon have better work to do.

Meanwhile, it is permissible to rejoice that the aeroplane, an American invention, has vindicated all the claims that were ever made for it as an instrument of war, and counts among the most efficient of all tools in the hands of military commanders. It has not driven the Zeppelins from the sky or the submarine from the sea, but it provides about the only means by which either can be directly attacked and conquered while utilizing their own advantages. Only the owners of the two larger machines claim that they have exerted any appreciable influence on the progress of the war, while nobody denies that the aeroplane has become as much of an army necessity as rifles or cannon. It has "revolutionized war" to an extent almost as great as did the invention of gunpowder, and brought about many and important changes in tactics. Its uses in peace are not yet as well developed, but that will come in time.

**Harness the Aeroplane***(Editorial in Omaha Daily News.)*

In both army and navy of the United States great activity in aviation will result from the experience of the war in Europe. This is a matter of course. We shall train aviators—but shall we use them? Is there anything which aviators can do of a useful character? Cannot something be done more dignified and respectable than looping the loop before crowds of gaping sightseers?

There is a field for them in the carrying of the mails. Many localities might be served by aerial mail lines with great advantage.

Would it pay? As a matter of money, it might and it might not; but it would train men for air service if the country should ever need them. And is it not better to give these men the consciousness of serving in peace rather than subject them to the demoralization of a barren and useless existence while waiting for war?

*(Continued from page 594.)***Controlling Surfaces**

The ailerons, which are fitted to the rear beam of the extensions of the top plane, measure each 7 feet 2 inches by 32 inches maximum depth. They operate in the usual manner; one up, the other down.

The rear stabilizing pin, which measures 5 feet long by 9 feet wide, is flat and set at a slight lifting angle. It is built in two sections and supported by the stabilizer and securely braced to the hull by half-inch steel tubes.

The two elevators, which are of generous size, measure each 4 feet 4 inches wide by 3 feet 4 inches deep, with a section balanced, is hinged to the rear of the hull and the vertical cut away to allow for rudder clearance.

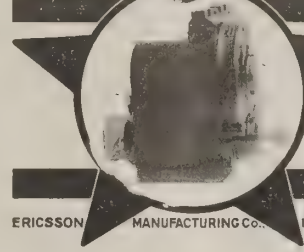
The combination air and water rudder, which is partially fin and swings between the two elevator flaps.

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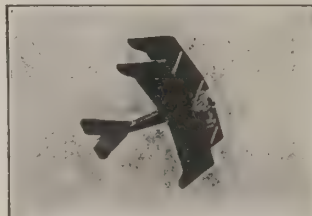
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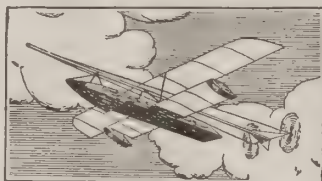
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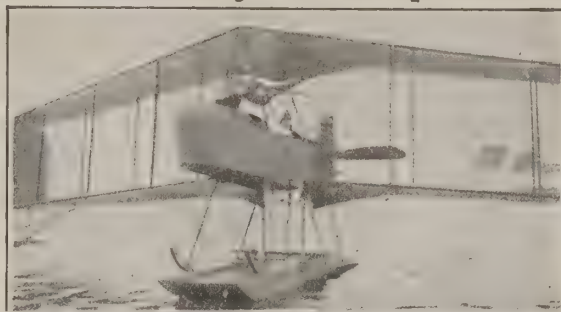


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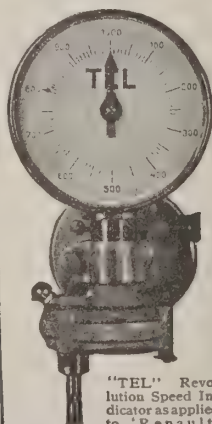
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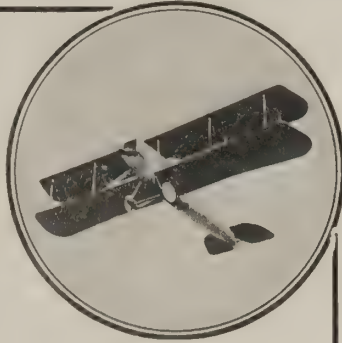
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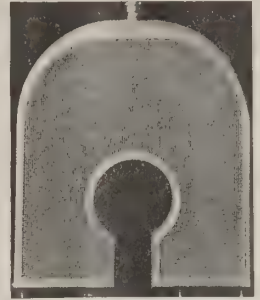
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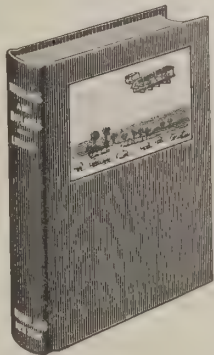
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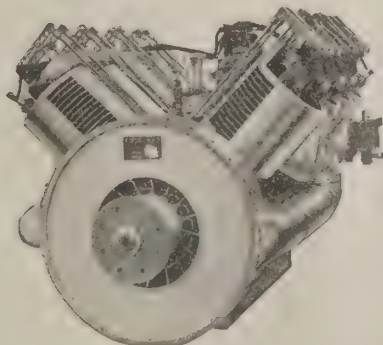
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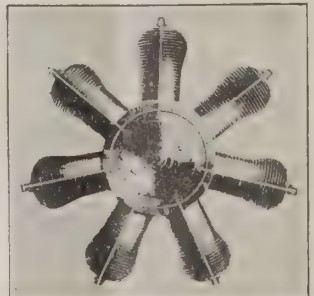
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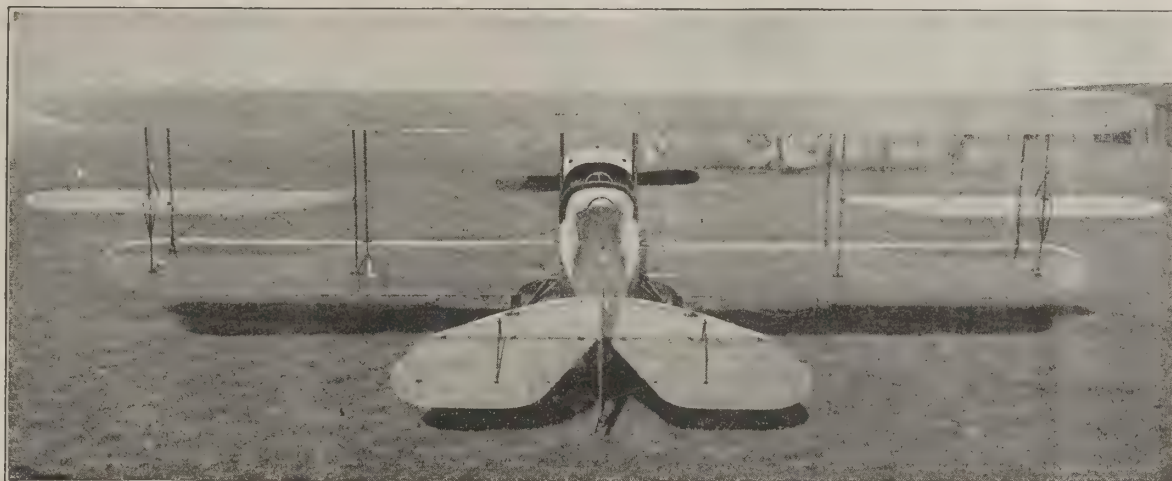
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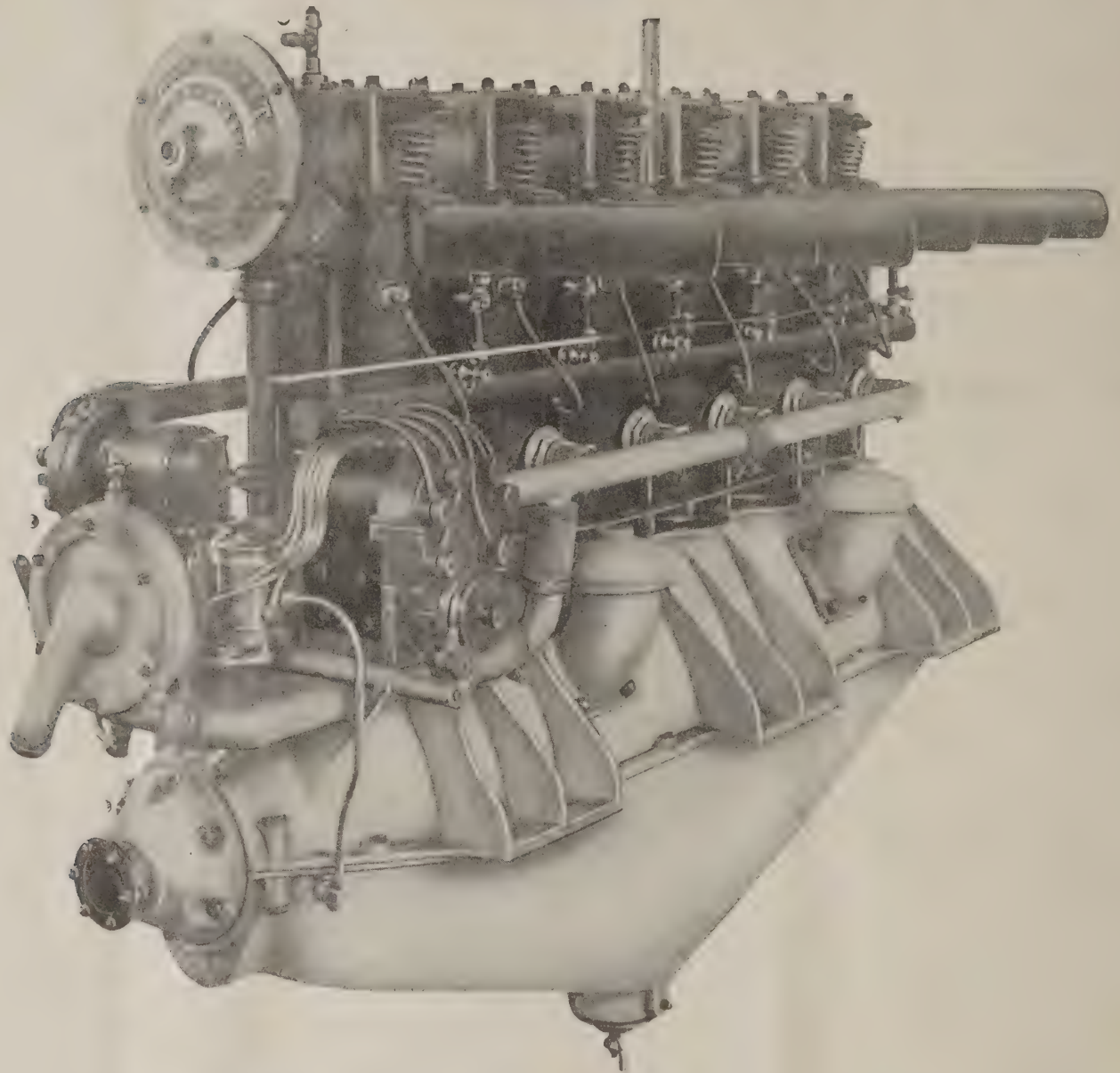
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# AERIAL AGE

## WEEKLY

VOL. 1. No. 26

SEPTEMBER 13, 1915

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SEP 13 1915

### "The Battle Cry of Peace"

### Blunder or Pork Barrel?

### U.S. Aviators Fired On--Com- plete Squadron Needed

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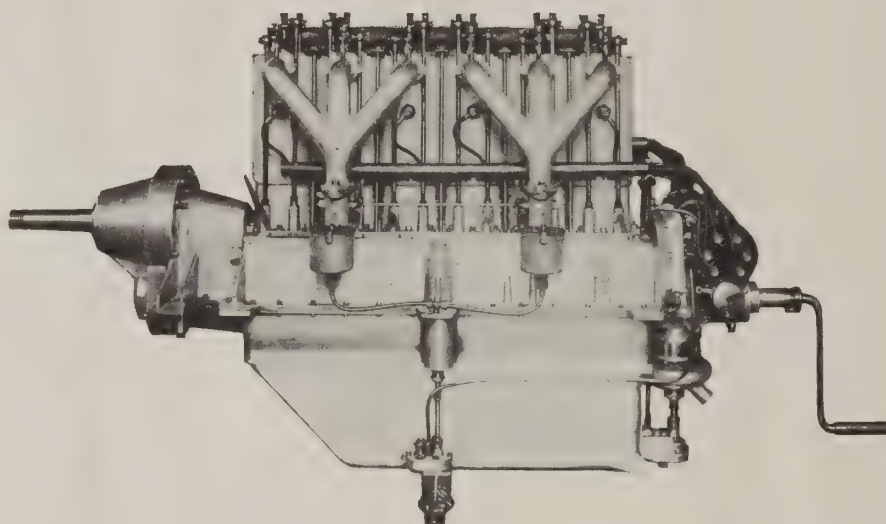
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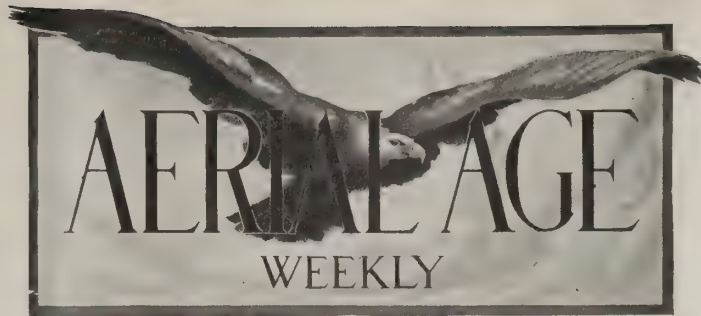
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PUBLISHED WEEKLY BY THE AERIAL AGE COMPANY, Inc., 116 West 32nd Street, New York City  
Entered as Second-Class Matter, March 25, 1915, at the Post Office at New York, N. Y., under the Act of March 3, 1879

VOL. I

NEW YORK, September 13, 1915

No. 26

### Blunder or Pork Barrel?

THE ever-boisterous *Times-Union* of Jacksonville, Fla., last month printed the following article:

Authority to open the machine shops of the Pensacola Navy Yard, now known as the aero station, and employ skilled mechanics in the manufacture of aeroplane parts as well as to make repairs to machines, has been received by Capt. Mustin, commandant of the station, from the Navy Department. The commandant is authorized to inaugurate this work as soon as he deems fit, and it is expected he will do so within the course of the next ten days. The shops already are equipped with machinery suitable for the work which is to be undertaken. This is only the beginning of the activities to come as soon as all the plans for the aero station are completed, for it is expected the force of skilled workmen will be gradually increased in number until more than a thousand are engaged in the manufacture of aeroplanes, especially as the government anticipates the building of its own motors and will do so as soon as the machinery necessary for this work can be secured and installed. Under the new order of things a class of ten commissioned officers will arrive October 1, and thereafter the same number will be sent here every three months for instruction, not including the enlisted men. There will be about fifty officers on an average at the station at all times, as the course is of twelve months and about twenty or more officers are stationed permanently there. Capt. Mustin also has just received authority to expend at the station over a quarter of a million dollars in improvements. These include thirty reinforced concrete hangars for aeroplanes, to cost \$110,000; a large floating shed for a dirigible balloon, to cost \$90,000; remodeling one of the buildings for use as a hospital, \$15,000; remodeling building No. 29 for use as a store house, \$15,000; remodeling seamen's barracks, \$5,000; miscellaneous repairs, \$25,000. The big dirigible will be delivered here by October 1, and the contract for the vast shed to house it will be awarded within the next ten days.

As we are about to go to press we learn that this article gives a correct interpretation of the Navy Department's attitude regarding the matter of manufacturing aeroplanes and motors, and that, notwithstanding the statement from Secretary Daniels, printed in the May 10 issue of *AERIAL AGE* that the Navy Department does not intend to manufacture, the efforts of the politicians who want to get the \$1,000,000 which the Navy has for aeronautics, are about to prevail.

We do not believe that the Navy is part of any pork barrel scheme, but we are at loss to understand the purpose behind the attempts being made to squander the meager resources available in an experiment which failed in England and France and wasted millions of dollars and invaluable time—as we had occasion to explain in details in *AERIAL AGE* for April 26, 1915.

There is, of course, not even the most distant possibility that our distracted Navy executives could succeed where the thoughtful British and French naval authorities failed. The result of three years of developments—or, better, lack of same—stands as an eloquent witness to prove that we cannot expect to succeed where Great Britain and France failed.

At the end of three years, and notwithstanding the fact that a world war has been raging in Europe, and the ship of state has had to face and is still facing rather difficult conditions, the aeronautical section of the Navy consists of a handful of aviators and less than one dozen aeroplanes.

What is more, the heads of the Bureaus on Construction and Repairs and Steam Engineering of the Navy have pointed out in strong terms the inadvisability of manufacturing by the Navy. Their report, which was transmitted to Congress by Secretary Daniels himself—and was published in *AERIAL AGE* for March 22—points out, among other things, that

"It would be a tremendous loss to the advancement of aeronautical work to lose the ideas and results of private invention and experiment. . . . The establishment of a Government plant for the general manufacture of aircraft would require a complement of officers that can ill be spared at the present time, not only because the Navy has a very limited number of specially-trained designers in this class of work, but because such a plant would call for the diversion from actual flying work of many of the most competent operators. As stated above, the establishment of such a plant would tend greatly to discourage the valuable initiative and resources of private manufacturers, who should be encouraged and stimulated as a most valuable asset, not only in the development of aircraft, but also for turning out such craft in quantities in time of an emergency."

In view of this, why do a few individuals in the Navy Department try to wed the Department to such a destructive program?

True, the time for Presidential elections is drawing near, and Senator Nathan P. Bryan believes he can produce votes. But they are all overlooking the fact that this country has changed in the past year, and such practice is no longer tolerated. The country will not permit the carrying out of the above-mentioned plan—and if the few individuals interested persist, to secure Senator Bryan's votes, it will be found that to every vote gained through crippling the future of our air service the Administration will lose one thousand votes of patriotic citizens who will thus express very forcefully their disapproval.

### U. S. Aviators Fired On—Complete Air Squadron Needed

OUR modest Army aviation section which was sent to the Mexican frontier to cope with the trouble, is meeting with unpleasant experiences, to which all modest and weak bodies are subject wherever lawlessness reigns. The following news item tells of an attempt to shoot down the aeroplane and two aviators that operate with the troops at the frontier:

Brownsville, Tex., Sept. 3.—While Lieuts. Joseph P. Morrow and B. Q. Jones, United States Aviation Corps, were making an observation flight along the Rio Grande, just west of the city to-day, they were fired upon three times from the Mexican side of the river, where Carranza soldiers are posted.

At first thirty shots were fired, then forty-four, then twenty-



nine. The number was counted by the soldiers on guard duty at the Brownsville electric light and water plant.

These soldiers also reported that apparently the same band turned their guns on them. They got behind shelter and returned the fire. There were no casualties on the American side.

What is needed is a complete air squadron and a firm policy—exactly the policy which, when adopted by Italy and France in their campaigns in Tripolitania and Morocco brought about an end to reprisal from the hostile native tribes. Unless our War Department gains by the experience of France and Italy, American lives, the lives of valuable soldiers, of whom we already have too few, will be lost.

### "The Battle Cry of Peace"

ONCE in a generation or so a book finds its way into history. "Uncle Tom's Cabin" was a book of this kind. By crystallizing the scattered elements of a great problem it moved a nation.

Today there is another problem no less vital to our country's welfare than the one that inspired Harriet Beecher Stowe. Slavery threatened our unity; today our very existence is threatened by our *defenselessness*.

The solution of the one involved us in war; the solution of the other will *prevent* war.

To bring this great problem home to the millions of American people J. Stuart Blackton conceived a great idea.

Pioneer in the field of motion pictures, recognized as the great authority on motion pictures, one of the heads of a great motion picture industry—he saw an opportunity to utilize the great and hitherto unused power of motion pictures to help toward the solution of this national problem.

To carry out this idea he produced a wonderful picture; from it he has written a wonderful book.

He took the facts and statistics contained in Hudson Maxim's "Defenseless America" and around them weaved an absorbing story. With the unlimited resources of the Vitagraph Company of America at his command he translated this story into motion pictures. The result is "The Battle Cry of Peace."

"The Battle Cry of Peace" is the first motion picture to be used to exploit an important, nation-wide propaganda. Its object is to bring to the notice of the greatest number of people in the shortest possible time the defenselessness of our country; not only to make the American people realize our condition as a nation, but to show them also the consequences to which this condition may lead, and finally to show them how to remedy this condition.

"The Battle Cry of Peace" is a call to arms—not for war, but for PEACE. It will be shown in motion picture theatres, schools, colleges and churches throughout the length and breadth of this country. It will arouse in the heart of every American citizen a realization of his strict accountability to his country in time of need.

Scores of prominent Americans—in Army, Navy and Administrative circles of our Government have contributed to this great production. Notable among its sponsors and endorsers are Dr. Lyman Abbott, the Hon. Lindley M. Garrison, Major-General Leonard Wood and Admiral George Dewey, representing the Church, the State, the Army and the Navy. "The Battle Cry of Peace" will appear in book form simultaneously with the release of the film, thus for the first time linking definitely the publication of a work through two different media—literature and the motion picture.

No one who has seen it can forget these scenes:

The Bombardment of New York, the Vivid Scenes of Battle, Wall Street in Flames, the Raid of Aeroplanes, the Submarine Torpedo Attacks, the Invading Hordes, the Riot at the Peace Meeting, Columbia and the Host of Peace.

It is an inspiring and inspired appeal to national patriotism, which every man and woman should see.

Recently Mr. Henry A. Wise Wood, the Chairman of the Conference Committee on National Preparedness, and President of the American Society of Aeronautic Engineers, in an address painted a remarkable word picture, the reading of which evokes emotions not unlike the emotions which are evoked by "The Battle Cry of Peace," tho not so intense. He said:

"Gentlemen, I have come here through some of the most beautiful country that man ever has tilled and woman carpeted with flowers. There were fields of grain that beat like the waves of a golden sea against green islands of trees hung with gems of fruit. There were winding roads of exquisite smoothness, swift ribbons of friendship which bind together in neighborly contentment the homes of the rich and the less rich alike. There were factories throbbing with work. There were white churches, there were libraries, there were playgrounds. And, gentlemen, filling all of these there were people—men, women, children—happy, thoughtless and carefree. In all of my journey I do not remember having seen a rough incident of life, nor even a policeman to remind me that there still remains in the world the need for force. And I thought how good is civil life; how precious the freedom to go or to come, to work or to play, to think or to speak, as one's own soul dictates. And how sweet the security of life—the peace with which the mother sees her children go forth for the day, the confidence with which she awaits their return at evening.

"Then I thought of the beautiful plains of Belgium, as I had seen them last, of the children at play, and the women and men at work in their fancied security, and the gem-like houses in which even the poor resided. Then the present came over me with horror; I wondered where are now the children, and the men and women I had seen, and what of the future of those who are left. Then I thought of the address which I had to prepare, of the horrid cause which had made it necessary, and of you, gentlemen, who wear the heavy robes of responsibility, and who are charged with the lives and happiness of those who have placed themselves in your keeping.

"I found myself wondering if some of us are not yet unaware of the full meaning of the change which has come over the world, of what it portends, and of the hideous possibilities for us which it contains. I wondered if some might not still be blinded by the few fragments which remain of our belief that all controversies may be settled without war, and if they know how thoroughly that belief, and our overconfidence in the integrity of the world has thrown our means of defense into decay, and left us open to the marauder."

"The Battle Cry of Peace" is to begin its New York run at the Vitagraph Theatre this week.

### An Organization of Patriots

[Editorial in Newark (N. J.) Star.]

A long step toward American preparedness for war has been made by the Aero Club of America in its plans for an aeronautical center at Sheepshead Bay, which would develop into a military camp whenever danger threatened this part of the Atlantic seaboard. The project is for an aero city, with a large plant for the manufacture of aeroplanes and a double row of concrete buildings housing students, instructors, military and civilian experts, sportsmen and aerial enthusiasts generally. Sheepshead Bay will thus be a school for turning out military fliers to take the places of those who have been induced by good salaries to join the belligerent forces in Europe. An aviation meet will be held in the spring in connection with a convention of engineers, experts and pilots in New York City.

Authorities have pointed out time and again that in the event of war the metropolis would need a large force of trained aviators near at hand. The scouting airman is the eye of the army or navy. As he glides over territory or waters occupied by an enemy he has a comprehensive view of the lines of trenches, the disposition of land or sea forces, the positions of artillery, the lines of communication, and with a range of observation covering 500 square miles he can often give his commander-in-chief a very good idea of the enemy's next move. The Aero club is showing itself an organization not merely of sportsmen but of patriots.



# THE NEWS OF THE WEEK

## The "Canada"

The giant warplane "Canada," built by the Curtiss Aeroplane and Motor Co., of Toronto, Canada, has been flown with success.

In a letter received from Canada by the *New York Times*, the first flights, which were made in the first days of the month, are described as follows:

"The first flights of 'The Canada' were everything that could be desired," the letter says. "Tony Jannus was the pilot and went up for a short flight and then came down and the machine was thoroughly gone over, while the motors were left running. Then on the second flight, he took up a passenger and they made a more extended trip. Everything worked beautifully. The two 160 horse power Curtiss standard motors never missed a shot, and speed of nearly 100 miles an hour was developed. All the attachments worked perfectly.

"The Canada' is of the type of 'The America,' which was built before the war to make the trip across the ocean, but is much larger. Its wings are 102 feet across, and it is built to carry more than 2,000 pounds. This will allow a heavy calibre rapid fire gun to be carried and a large quantity of bombs.

"The new developments are the most wonderful things about it. The Sperry stabilizer is used and by a new arrangement a telescope is fitted to it so that the pilot always knows his exact vertical. That is, he always knows the angle his machine has with the horizontal. This, with other fittings, the nature of which cannot be explained, as they were developed by the makers, allows the pilot merely to pull a lever to drop bombs on any specified object. This will eliminate the wasteful method of bomb dropping hitherto employed and will make these new aeroplanes the most deadly weapon that the war has yet developed.

"The new machine allows the pilot to know exactly what effect his speed and the wind will have on the falling bomb, and makes their destructive power a certainty instead of a hit-and-miss proposition, as it has been to date.

"The Canada was built by the Curtiss Aeroplane Company at their workshops in Toronto, and will cost about \$40,000. The sister ships or other aeroplanes of the same model, will all be standardized with it, and everything has been planned so that the British Government will have several squadrons of these giant machines all of exactly the same model and with all their parts interchangeable.

"The Curtiss Company has orders for 100 of the same model as the America, which is still in service. It is acting as a convoy for troop ships and other vessels. With its large calibre machine gun, it has proven a formidable foe to submarines, and is said to have destroyed three to date. Flying, while on scout duty about 600 feet above the Channel or the Irish Sea, the pilot can see twenty miles in every direction, and at a speed of more than 65 miles an hour can catch anything that looks suspicious. In England they say a gun-carrying aeroplane is worth five destroyers or cruis-

ers, and their use is strongly advocated, because they release the fleet units for battle use.

"At the training school of the Curtiss Company in Toronto seventy-five men are always being schooled for the British aviation corps. Thirty-five have already joined the colors, and several are leaving each week. There is activity such as was never seen before at the flying field. At least six aeroplanes are always in the air. The men are being trained on machines that average 85 miles an hour. When they have finished their course they are ready to take part in the war work, and those who have been on active service have been highly commended.

"In addition to the other types of machines ordered, the Curtiss Company has an order for 400 of what is known in the British service as Model R. This is a fast reconnoitring or scout machine, and a number are being shipped every week. Many of these are being made in Buffalo.

"The final or Government test of the Canada will take place on Tuesday at the flying field in Toronto. Antony Jannus will take the machine out, and a number of the aviators about to leave for England will take turns in flying with him. Several will accompany the giant on its trip abroad, and from now on a selected corps of aviators will be trained at the Curtiss school in the handling of these machines.

"There is talk about fitting some of them so that they can carry men instead of explosives. It would be quite possible for a dozen men to be carried, and in the near future tests will be made in the handling of the machine with soldiers on board.

"When the official tests are over I will let you know, if possible, how the machine acted, as it will be of interest to everybody, these being the greatest that have ever been built."

## American Aero Flotilla with French Army

According to a report from Paris, twenty members of the American Ambulance have applied for admission to the aviation service and two of them have been accepted already, Lawrence Rumsey, of Buffalo, former Harvard polo player, and C. C. Johnson, of St. Louis, son of Col. David Johnson, U. S. A. Johnson is a University of Virginia man.

Both Rumsey and Johnson have been at Dunkirk for the past nine months.

These two airmen will bring the number of American flyers fighting for France to eight, six of which have already seen notable service on the western battle front.

The names of the six American aviators are William Thaw, Second Lieutenant; Norman Prince and Elliot Cowdin, corporals; J. J. Bach and W. B. Hall, first class soldiers, and Frazier Curtis, second class soldier. Ruel, the Chicago aviator, is of French parentage and was mobilized, though he was born in the United States. All the Americans accepted for aviation had previous experience, although some of them were not more than pupils without a pilot's license in any country. Prince, Cowdin and Curtis joined the service directly by enlistment at Paris early in March. Thaw, Bach

Three-quarter view of the Model R-2 Curtiss Warplane, which made the two altitude records. The records established by Mr. R. V. Morris in his flights at Buffalo, N. Y., on August 10, 1915, have been homologated as follows:

American Altitude Record—Pilot and two passengers: 8,024 feet.

American Altitude Record—Pilot and three passengers: 8,105 feet.







Goroku Moro, who was tutored at the Wright School, Dayton, and who is now associated with the Hudson-Wright Aero Co.

and Hall enlisted in the Foreign Legion early last autumn and passed the winter in the trenches near Craonne with the Second Regiment, in which thirty-two Americans are still serving. At present Thaw is flying from Luneville, where he was sent in March. His work is the regulation of artillery fire, reconnaissances of artillery positions and general movements of large bodies of troops. Cowdin and Prince are stationed at Bruay, north of Arras, where they went on June 25. Hall and Bach will be sent to the front in about a month. Curtis is slightly ill and is resting up.

Thaw has been flying an 80 horse-power Caudron biplane. He will soon get a new double motor 160 horse-power Caudron biplane of 33 meters wing spread. His old machine had been shot to ribbons around Luneville and the authorities are replacing the small by the large Caudrons as fast as the enemy's fire wears out material. Cowdin and Prince are flying 130 horse-power Salmson Voisin biplanes.

Hall and Bach are training at Le Bourget on 80 horse-power Nieuport biplanes, the smallest and fastest machines used in the French army. Curtis's last machine for training at the Camp d'Avord was of the same model.

Of the six men Thaw has flown most at the front. He was the first to be decorated as a result of citations in the order of the day and the first to receive a commission. Prince and Cowdin are both experienced flyers. Bach is an engineer who studied at Paris after finishing in America. He has lived in France for several years. Immediately before the war he

did a considerable amount of work for the French firm of engineers with which he is associated in connection with the manufacture of aeroplanes. He had flown comparatively little, however. Hall had flown considerably in America. He is an engineer also. Curtis had flown for several years. Bach speaks French excellently and Thaw pretty well.

#### Everybody's Magazine Praises Work of Aero Club of America.

Everybody's Magazine for September, in the first of a series of articles on national defense, praises the work of the Aero Club of America and of people prominent in aeronautics, such as Messrs. Henry A. Wise Wood, Alan R. Hawley, A. B. Lambert and Henry Woodhouse.

#### Aviator W. S. Luckey Ill.

Friends of aviator William S. Luckey will regret to learn that he is ill of typhoid pneumonia at Erlanger, Kentucky, where he went to fill some exhibition engagements. Jack McGee will fill Luckey's engagements.

#### Curtiss Plant Again To Be Enlarged.

The Curtiss Aeroplane Co., of Buffalo, has filed plans for its fourth addition within a year. The new plans call for the erection of a boiler house and extension to the factory in Churchill street at a cost of \$50,000.

#### Jay Smith with Benoist Aircraft Co.

Jay Smith is now with the Benoist Aircraft Co., at their new plant in Chicago, passenger carrying and giving exhibitions. He is flying the Benoist Flying Boat equipped with the new three-in-one control. Smith has offered his services to the State of Pennsylvania in case they should be needed.

#### California News.

Malcolm Loucheed arrived this week from Cannanea, Mexico, where he was mechanic for the Carranza Aviation Corps. The Loucheed brothers are assembling their tractor hydro-aeroplane at the fair, and have taken over the passenger-carrying concession from Bob Fowler.

Charles Niles and Silvio Pettrossi gave the first of a series of flights at the Exposition Sunday, August 29th. Niles flew upside down for half a mile, giving the most spectacular flight of exhibition flying ever seen in San Francisco. Pettrossi gave a demonstration of the Dead Leaf Fall that was equally interesting to the admirers of this kind of flying.

Frank Bryant has become instructor of the Christofferson school of flying. Mr. Bryant is one of the oldest flyers in the business and very capable. On account of the passenger carrying being so large, Harry Christofferson is not connected with the school, but devotes his time entirely to passengers.

The Christofferson Aircraft Mfg. Co. are moving their factory to a larger place in Oakland, Cal., across the bay from San Francisco. This has become necessary, as the present location is too small.

Joe Boucquel will fly at Redding, Cal., September 6th to the 9th, making his first loops. He has done upside down flying for some weeks.



The 50-H.P. Sloane Tractor Biplane which has just been delivered to Overton M. Bounds, of Kingston, Oklahoma. In its trial flight this aeroplane attained a speed of 71 miles an hour and climbed 415 feet per minute.



### Curtiss Gets Hydroaeroplane Claim

Glenn H. Curtiss has been granted by the third and final tribunal of the Government Patent Office the last of his chain of claims necessary to make the hydroaeroplane patent complete. The ruling was rendered on September 4th. Further details will be given in the next number of AERIAL AGE.

### Toronto Curtiss News

The Curtiss Aeroplanes and Motors, Ltd., of Toronto, is not a branch of the Curtiss Aeroplane Co., of Buffalo, but is an independent company organized under a Dominion charter.

At the Toronto Curtiss School flying goes on continuously from 5 o'clock in the morning until late at night. Probably more flying is done at this school than at any other school in the world, each machine averaging over one thousand minutes per week. The record has gone as high as 8 hours, 15 minutes per day for one machine.

Instruction is given to all students of the Toronto Curtiss School in the construction of machines and in the operation and maintenance of the motor. Most of the candidates at the school are being prepared for war service, and it is therefore absolutely necessary for them to fully understand both the machine and the motor, in order to be able to effect any repairs from time to time.

The Toronto Curtiss School is divided into two parts—water work and land work. The water branch is situated on Toronto Bay at the island, and the equipment consists of three Standard Flying Boats, piloted by Mr. Victor Vernon, Mr. John Guy Gilpatric, and Mr. Theodore C. Macaulay. The Land School equipment consists of five Standard JN3 machines, all fitted with O.X. motors, and are piloted by Victor Carlstrom, Steve McGordon and Bert Acosta.

Tony Jannus is employed with the Curtiss Company as an engineer. His chief attention will be devoted to the testing out of the big machine.

### Art Smith to Be Star Attraction at Iowa State Fair

Art Smith, who has unquestionably won the title of the world's most fearless aviator, will fly at the Iowa State Fair and Exposition this year. He will give his regular performance of ten consecutive loops, drops, falling leaf glides and upside flights, for which he has become world renowned, in addition to looping the loop at night with fireworks attached to the machine.

### Puget Sound Aerial News.

By Robert La Tour

With aviators T. T. Maroney and Herbert Munter out of town, actual flying in Seattle has been somewhat quiet the last few weeks. Maroney is flying in Oregon, and Munter



William S. Broch, the seventeen-year-old pilot, a former pupil of the Thomas School at Ithaca, who is now doing exhibition work in the West.

is filling dates in Idaho and Montana. Munter's quality of flying in the high altitudes of Montana is of the class that has been seldom, if ever, seen there, and is sure to win him return engagements, as it has done for him elsewhere.

The Hamilton Aero Mfg. Co., of Seattle, have just sold their new flying boat, and have a new tractor biplane in the shop. This latter machine gives promise of great speed with a minimum of power, as the designers have paid particular attention to reducing the head and skin friction, the machine being streamlined throughout and a very smooth finish given to all exposed surfaces by several coats of filler well worked down and several coats of "Hamilton" blue, which, it is claimed by the builders, makes the machine nearer invisible at low altitudes than any other color. The construction and finish is the best that has been seen in this section, and the makers are to be commended for turning out such a well finished and designed model.

Aviator Gustav Strommer, of Tacoma, has been flying at American Lake in connection with business men's military encampment of Washington, giving them an insight into the advantages of aerial equipment for army use.



The new test house recently completed at the works of the B. F. Sturtevant Company, of Hyde Park, Mass., to be devoted exclusively to the testing of their 140-H.P., eight-cylinder aeronautical motors. The testing equipment, of the most recent and approved design, is complete in every detail.





# FOREIGN NEWS

Edited by L. d'Orcy



## FRANCE

The vigilance and efficiency of the aerial squadron guarding Paris saved, on August 28, the capital from an attack by German aeroplane raiders, two of whom were killed when their machine was brought down by shots from the pursuing flotilla. Three civilians of Compiègne—one a child—were killed by the raiders.

The German machines, six in number, crossed the French lines, flying at a height of nearly 11,000 feet and driving toward the city. When over a point to the north of Paris they sighted the French defence squadron, which was waiting for them, and all but one of the German aeroplanes wheeled about and headed for their own line.

Four of these escaped, but one was outdistanced by its pursuers and was riddled by bullets. It fell flaming into the forest of Halatte, where the burned bodies of two aviators were found.

The sixth machine dropped five bombs at Montmorency, a town fifteen miles from Paris, but no one was hurt. The batteries at Montmorency opened fire on the aeroplane, but it got away in the haze.

Official announcement of the death of the famous aviator, Adolphe Pégoud, was made in Paris on September 1. He was killed by a shot from a rapid-fire gun on one of the giant twin-propeller Aviatiks used by the Germans.

It is significant that on his last visit to Paris on Aug. 29, Pégoud expressed admiration for these very machines, saying that it was easy to bring down the German taubes; one rose above them, then dived suddenly underneath to allow his observer to shoot unmolested; but he pronounced the new Aviatiks dangerous and effective, saying: "They are so fast that it is very difficult to outmanoeuvre them."

Pégoud, alone in his aeroplane, was making a scouting trip. He sighted the German aeroplane and at once began the attack. When near Petite Croix he opened fire with his machine gun and exhausted several cartridge bands when he was seen to fall forward over his steering gear. A bullet has struck him and he died instantly. His machine fell inside the French lines.

The news of Pégoud's death caused sincere sorrow. He was regarded as a hero by the French people. Only twenty-six years old, Pégoud had served five years in the French cavalry and had fought through the Morocco campaign. At the outbreak of the present war he joined the aviation corps and because of his skill and daring he soon won a Sub-Lieutenant's commission.

Pégoud recently won the Military Medal and the Military Cross. On July 11, he brought down his sixth German aircraft.

Paulhan, the famous French aviator, who was sent to help the Serbians some months ago, has been made a Captain in the Serbian Army for his gallantry in bringing an Austrian aeroplane to earth. It is interesting to note that Paulhan, at the outbreak of the war, was not doing sensational aerial stunts, but growing flowers on the Riviera for the London market. He promptly abandoned this work and volunteered for service in the air.

## GERMANY

Germany's fleet of Zeppelins has been repainted a leaden gray, similar to the color of warships, which renders them difficult to see, even when flying beneath the clouds.

A telegram from Zurich, published in the Milan Stampa, says that during recent flights over Lake Constance, Zeppelins appeared in their new dress. The latest models resemble large fish. Both ends taper, so that they have lost to some extent the familiar cigar shape.

The German War Office announced on August 28 the following:

There has been much activity by artillery and airmen. Enemy aviators bombarded Otsend, Middelkerke, and Bruges without success. In Mülheim, in Baden, three civilians were killed by bombs dropped by aviators.

## HOLLAND.

Following the repeated incursions of German airships over Dutch territory, a royal decree has placed the waters about Terschelling, Ameland, Schiermonnikoog and Rottum under martial law.

According to a dispatch to the Amsterdam *Telegraaf*, a Zeppelin airship passed over the island of Vlieland, on August 25th, travelling in a northwesterly direction.

Vlieland is off the entrance to the Zuider Zee and in a northwesterly direction lies the northeast coast of England.

## ITALY.

A pitched battle between Italian and Austrian seaplanes occurred on August 20th in the Northern Adriatic.

An Austrian seaplane flotilla of four machines was attempting to raid Italian coast towns, when an Italian seaplane squadron came up and engaged the enemy. In the ensuing fight three of the Austrian seaplanes were brought down and their crews were either killed or captured, while the fourth machine escaped.

The decision was brought about only after a long stern chase, in the course of which both contestants displayed a great deal of bravery and excellent airmanship.

## RUSSIA.

Russian gunners have brought down another German military airship, which presumably belonged to the Parseval type. The airship was flying near Vilna, when a Russian field battery opened fire upon it and hit it four times. The airship was forced to land and her crew, consisting of two officers and eight soldiers, were made prisoners.

A machine gun, bombs and incendiary darts were found in the gondola of the captured airship.

According to some reports this airship was a Zeppelin.

A Russian aeroplane squadron bombarded Constantinople, on August 24th, killing or wounding forty-one persons, of whom eight were Greeks and three Armenians.



(Courtesy of Illustrated London News.)

Sketch of a modern German battle-aeroplane of 120 feet span, driven by two 100 h. p. engines. According to some advices there is a third engine driving a pusher screw in the nacelle and its gun is replaced by one mounted on each of the tractor fuselages.





# MODEL NEWS

Edited by WALTER H. PHIPPS



## CLUBS

### THE AERO SCIENCE CLUB OF AMERICA

29 West 39th Street New York City

### PACIFIC NORTHWEST MODEL AERO CLUB

915 Ravenna Boulevard, Seattle, Wash.

### LONG ISLAND MODEL AERO CLUB

401 Grant Avenue, Cypress Hills, L. I.

### BAY RIDGE MODEL CLUB

6730 Ridge Boulevard, Bay Ridge, Brooklyn

### DETROIT AERO RESEARCH AND MODEL CLUB

c/o William P. Dean, 1363 Townsend Avenue, Detroit, Mich.

### BUFFALO MODEL AERO CLUB

c/o Christian Weyand, 48 Dodge Street, Buffalo, N. Y.

### THE ILLINOIS MODEL AERO CLUB

Room 130, Auditorium Hotel, Chicago, Ill.

### TEXAS MODEL AERO CLUB

517 Navarro Street, San Antonio, Texas

### HARLEM MODEL AERO CLUB

73 West 106th Street, New York City

### MILWAUKEE MODEL AERO CLUB

402 Bradford Avenue, Milwaukee, Wis.

### CONCORD MODEL CLUB

c/o Edward P. Warner, Concord, Mass.

### AERO CLUB OF ST. LOUIS

Columbia Bldg., 8th and Locust Streets, St. Louis, Mo.

### MODEL AERO CLUB OF OXFORD

Oxford, Pa.

### Wallace A. Lauder Breaks World's Official Distance Record with Flight of 3,537 Feet.

The trials of the Summit Model Aero Club in the hand-launched distance contest of the National Model Aeroplane Contest, held at Garden City, September 31, produced some wonderful flying and set up a new world's record for the event.

Wallace A. Lauder, using his light double-surfaced model, which was described and illustrated in the issue of May 31, sprang the surprise of the afternoon by flying his model 3,537 feet at the first trial, establishing a new world's record for hand-launched distance models. This flight was remarkable, the model rising to a height of about 500 feet before the power gave out and then gliding for just two and one-half minutes. As the total duration of the flight was four and one-half minutes, the glide was really longer than the actual flight.

The other contestants, who all made very creditable showings, were Henry Herzog, Carter Tiffany and Curtis B. Myers.

The club and individual results are as follows:

#### Best Flight.

Wallace A. Lauder.....	3,537	2,276	1,880
Curtiss B. Myers.....	1,990	122	25
Carter Tiffany.....	1,700	75	50
Harry Herzog.....	1,343	1,099	1,094

The judges, representing the Aero Club of America, were Messrs. Henry Woodhouse, Walter H. Phipps, Burt M. McConnell and W. S. Sheehan.

The contest was for distance flown by models of any type launched by hand.

The National Model Aeroplane Competition has been instituted by the Aero Club of America to encourage the efforts of thousands of young men all over the United States who are beginning their activity in aeronautics by flying and experimenting with aeroplane models.

The contests are to be held on any day during the last half of each month, beginning with August, at places selected by the Model Clubs.

The nature of the contests is to be different each month, as follows:

August—Distance, launching from hand; any type models.

September—Duration, starting from the water. Open to model flying boats and hydroaeroplanes, the flying boats to be allowed 20 per cent in addition to the duration achieved.

October—Duration, starting from the ground; any type models.

Cash prizes of \$50, \$25 and \$10, offered by the Aero Club of America, from the National Aeroplane Fund, will be awarded to the individual members of the various clubs making the best record each month. The Villard Trophy, donated by Mr. Henry S. Villard, will be awarded to the club whose members collectively make the largest score during the three months—this to be computed by the point system.

A club becomes the owner of the trophy when it has been won for three consecutive years by its members. The rules governing the winning of the trophy will be progressive in accordance with the progress made in model flying.

### Aero Science Club.

Ry G. A. Cavanagh

At the coming meeting of the Club, Mr. W. Russell, formerly connected with the aeronautical branch of the National Guard, will give a talk on "The Use of Wireless on Aeroplanes." Mr. Russell has had considerable experience in the wireless field, and was preparing to demonstrate the use of the wireless on aeroplanes, but was prevented from so doing by the disaster that befell the late Cecil Peoli. Mr. John Fleming,

who has recently been experimenting with seven and eight-foot kites, has been asked to co-operate with Mr. Russell in an effort to determine the value of wireless by the use of kites. If both gentlemen agree to co-operate in the work, experiments will in all probability be carried on at the Oakwood Heights Flying Field, Staten Island, N. Y. Mr. Russell's talk no doubt will be of interest and value.

On August 31st, the Summit Model Aero Club held its contest for the Villard Trophy and the Aero Club of America prizes. The greatest flights made during the contest are as follows:

Mr. Wallace Lauder, 3537 feet.

Mr. Harry Herzog, 1343 feet.

Mr. Curtis B. Myers, 1919 feet.

Mr. Carter Tiffany, 1242 feet.

Mr. Lauder's flight of 3537 feet constitutes a world's record. Recently Mr. Lauder made a remarkable flight of 195 seconds' duration. The contest was held at the Garden City Aerodrome.

Word has been received from the Milwaukee Branch of the Club that Mr. Lynn E. Davies, President of the Milwaukee Model Club, made a flight of 2382 feet during the August 30th contest in the National Model Aeroplane Competition. If this flight is not bettered, Mr. Davies will hold second place for the first contest of the series. This also breaks the record for the Milwaukee Club. Mr. Gilbert Counsell, of the same club, came second with a flight of 1478 feet. More reports are expected regarding this contest.

Mr. Gustaf W. Granberg, Worcester's only aviator, recently became a member, and is now having a large silver cup made which will be awarded the winner of a model contest, which will be decided upon some time in the near future. Mr. Granberg is starting a branch of the Aero Science Club in Worcester and has recently been appointed a director. For further particulars address the Secretary, 29 West Thirty-ninth street, New York City.

### Pacific Northwest Model Aero Club Competes in National Contest

The Pacific Northwest Model Aero Club held their final contest August 29th for hand-launched models for distance, with the following results: George Stoneham, 1,583 feet 8 inches, 1,611 feet 2 inches, 1,523 feet 5 inches. Lawrence Garrick, 1,054 feet 6 inches, 1,288 feet, 1,321 feet 6 inches. Robt. La Tour, 1,822 feet 6 inches, 1,538 feet 2 inches, 2,455 feet. Leon Dover, 807 feet 6 inches, 1,413 feet 9 inches, 647 feet 3 inches.

Leon Dover had the misfortune of breaking his model in trials before the contest began, and as Frank Barney, the substitute, was not on hand, he had to compete with a patched model.

Mr. Guerard, of the Aero Club of France, was the official.

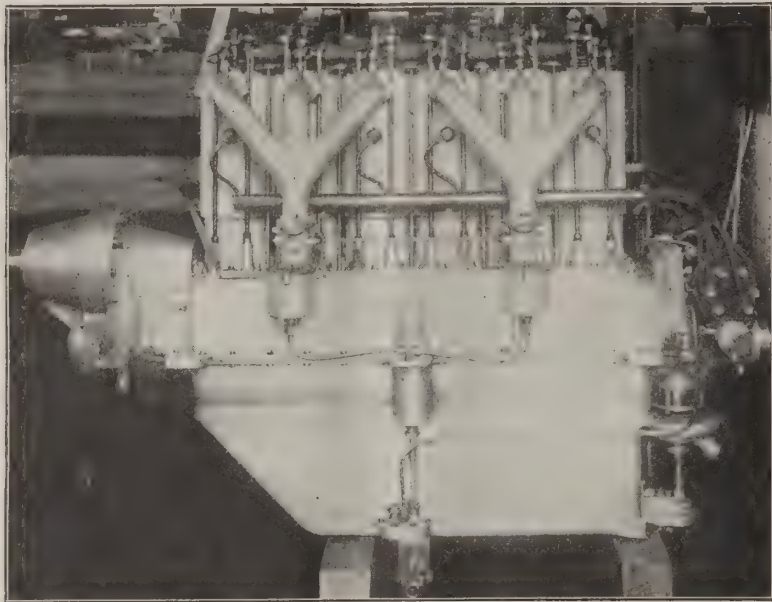
### Chicago Model Flyers Make Great Showing in Contest

Winning flights in the National Model competition distance finals went far beyond the expectations of enthusiasts. First and second distances of 2,875 and 2,410 feet were made by Mr. Arthur Nealy and Ellis Cook, respectively. An exceedingly strong wind, together with perfect directional control accounted for the great distances. Mr. Nealy passed his old American and world record of 2,400 feet in a 130 second flight that probably sets a new American record for distance models.

The day was excellent for distance flying and plenty of power and speed were the order of the day. As early as 11 o'clock, members of the distance team had arrived on the field and commenced tuning up their models. From then until dark practice flying continued, each flyer being chary

(Continued on page 624.)





#### Aeromarine Type K-6.

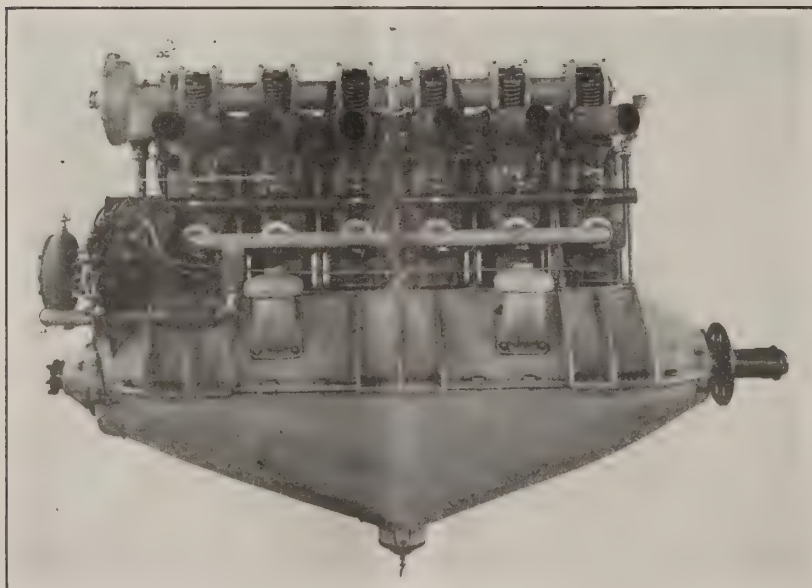
Six cylinder vertical  $4\frac{5}{16}$ " x  $5\frac{1}{8}$ ". 100 H.P. at 2000 r.p.m. Propeller geared down to 1142 r.p.m. Cylinders cast individually with copper jackets electrolytically deposited. Valves concentric and in head of cylinder. Intake within exhaust valve, and mechanically operated by rockers and push rods, from cam-shaft in usual position in crank-case. Seven bearing crank-shaft. Two Zenith carburetors. Two Bosch magnetos and two spark plugs to each cylinder. Weight 435 lbs. complete, without radiator. Gasoline consumption 0.63 lbs. per H.P. per hr. Oil consumption 0.063 lbs. per H.P. per hr. Width overall 30". Height overall  $36\frac{3}{4}$ ". Length overall 58".

Manufactured by the Aeromarine Plane & Motor Co., Times Building, New York City.

#### Curtiss Type V-2.

Eight cylinder V-type. 5" x 7". 160 H.P. at 1300 r.p.m. Cylinders of nickel-steel,  $\frac{1}{8}$ " thick. Jackets brazed on. Pistons of aluminum alloy. Five bearing crank-shaft, cylinders staggered with connecting rods side by side. Two Zenith carburetors. Two Berling magnetos, two point ignition. Weight 565 lbs. complete, without radiator. Width overall,  $35\frac{9}{16}$ ". Height,  $32\frac{3}{16}$ ". Length, —.

Curtiss Motor Co., Hammond:port, N. Y.



#### Hall-Scott Type A-5.

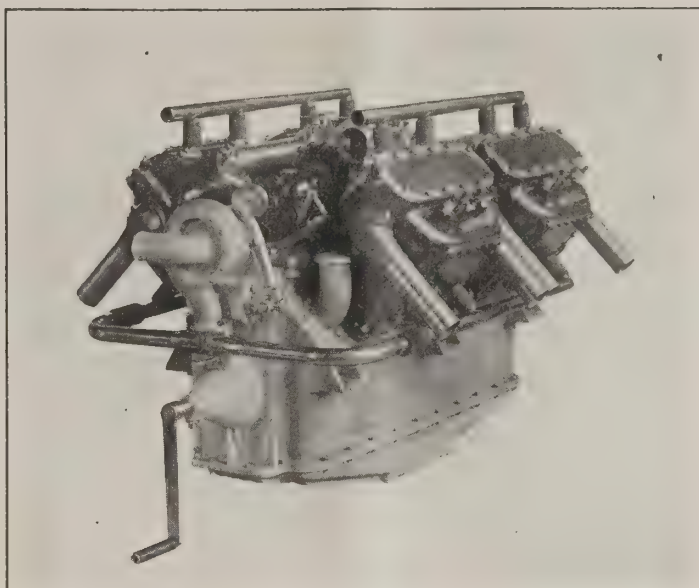
Six cylinder vertical 5" x 7". 130 H.P. at 1300 r.p.m. Cylinders cast individually with integral water jackets. Overhead valves and overhead cam-shaft driven thru bevel gears and a vertical shaft. Seven bearing crank-shaft. Double jet vertical Zenith carburetor. Two Splitdorf "Dixie" magnetos, and two spark plugs to each cylinder. Weight 525 lbs. complete without radiator. Gasoline consumption 0.45 lbs. per H.P. per hr. Oil consumption 0.026 lbs. per H.P. per hr.

Hall-Scott Motor Car Co., San Francisco, Cal.

**Sturtevant Type 5.**

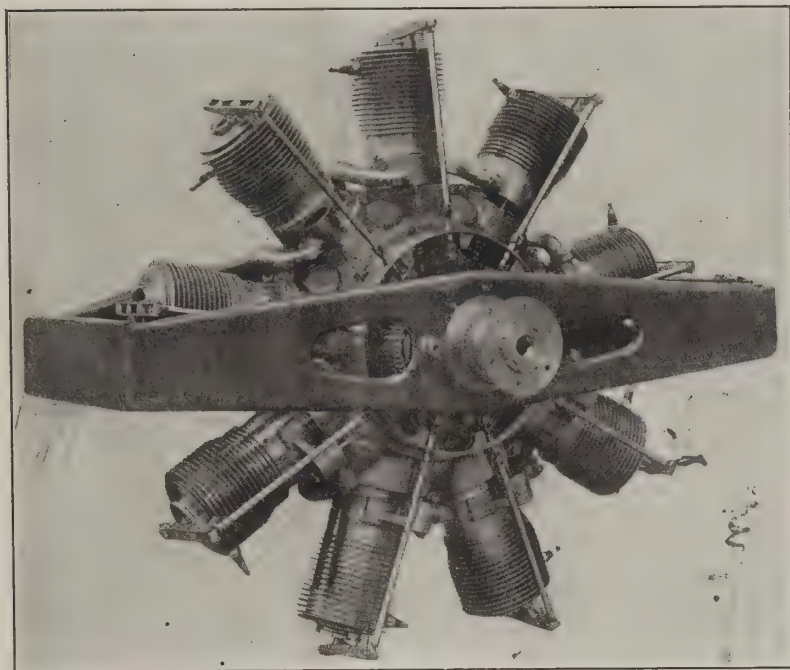
Eight cylinder V-type.  $4" \times 5\frac{1}{2}"$ . 140 H.P. at 2000 r.p.m. Propeller driven through gears at 1000 to 1500 r.p.m., according to gear ratio. Cylinders cast in pairs with integral water jackets. L-head type. Three bearing crank-shaft, cylinders staggered with connecting rods side by side. Double jet vertical Zenith carburetor. Ignition from two magnetos. One spark plug in head of each cylinder. Weight complete, 550 lbs. without radiator. Gasoline consumption 0.51 lbs. per H.P. per hr. Oil consumption, 0.032 lbs. per H.P. per hr. Width overall, 28". Height overall,  $29\frac{9}{16}"$ . Length overall,  $54\frac{3}{4}"$ .

B. F. Sturtevant Co., Hyde Park, Boston, Mass.

**Gyro-Duplex Type L.**

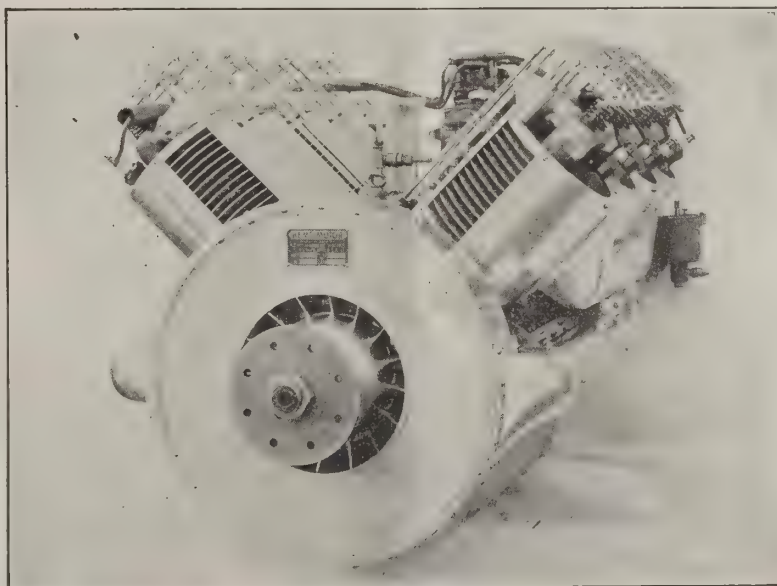
Nine cylinder revolving engine.  $4\frac{1}{2}" \times 6"$ . 102 B.H.P. at 1250 r.p.m. Cylinders and crank-case of steel. Cylinders machined all over. Exhaust valve in head. Piston-valve at base of cylinders acts as inlet and auxiliary exhaust. Weight 270 lbs. complete. Diameter,  $37\frac{1}{2}"$ . Length overall, 24.7". Gasoline consumption, 0.79 lbs. per B.H.P. per hr. Oil consumption, 0.16 lbs. per B.H.P. per hr.

Gyro Motor Co., 774 Girard street, Washington, D. C.

**Kemp Type J-8.**

Eight cylinder V-type.  $4\frac{1}{2}" \times 4\frac{3}{4}"$ . 80 H.P. at 1150 r.p.m. Cooling by forced air circulation from centrifugal fan on crank-shaft. Five bearing crank-shaft. Connecting rods side by side, and offset so cylinders are not staggered. Two Zenith carburetors. Mea Magneto. Weight 380 lbs. complete. Width overall,  $25\frac{1}{2}"$ . Height overall,  $24\frac{1}{2}"$ . Length overall, 29".

Kemp Machine Works, Muncie, Ind.



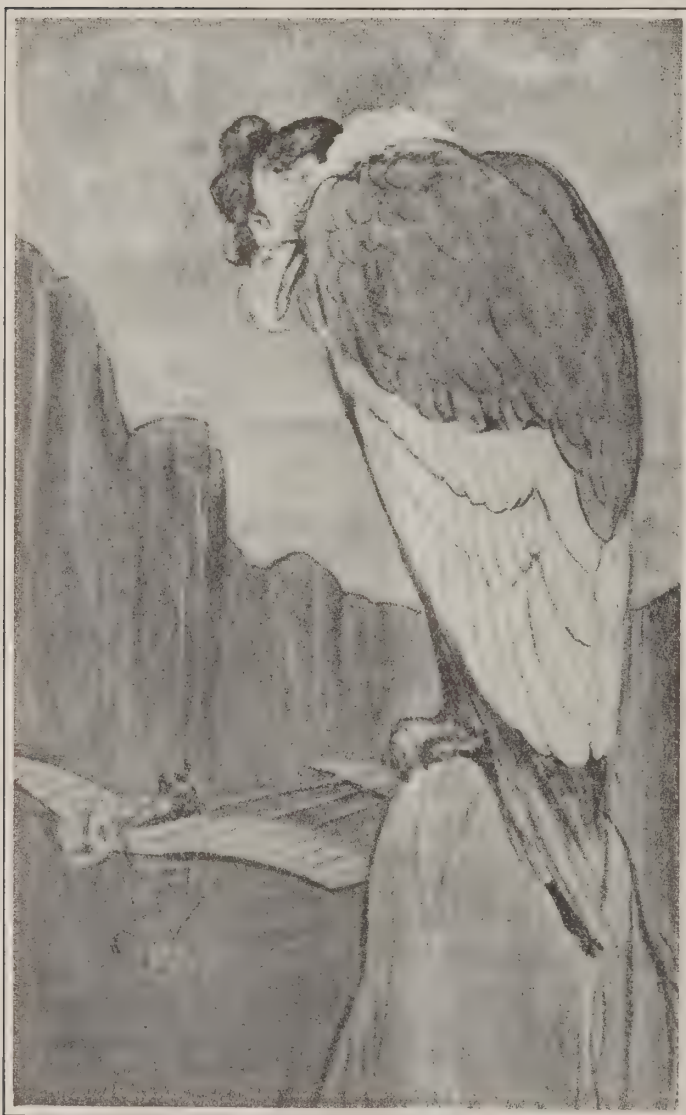




Aeronitis is a pleasant, a decidedly infectious ailment, which makes its victims "flighty," mentally and physically. At times it has a pathologic, at times merely a psychologic foundation. It already has affected thousands; it will get the rest of the world in time. Its symptoms vary in each case and each victim has a different story to tell. When you finish this column YOU may be infected, and may have a story all of your own. If so, your contribution will be welcomed by your fellow AERONUTS. Initials of contributor will be printed when requested.

Old Zeppelin and all his works  
I'd find myself forgiving  
If he'd soar up to where it lurks,  
And from the sky  
So high, so high,  
Bring down the cost of living.

—Current Opinion.



#### The Misanthropic Condor

Said the condor, in tones of despair:  
"Not even the atmosphere's rare,  
Since man took to flying,  
It's really *too* trying,  
The people one meets in the air."

(Courtesy Century Magazine.)

A fellow who claims to be a captain in a non-existing aerial reserve and head of a non-existing aviation school, has been getting some publicity on a claim that he proposed to a girl while he was navigating the upper atmosphere of Garden City. Some imagination.

\* \* \*

Many years ago I pointed out that we had no pictures representing that electrical thrill between the two sexes known as The Kiss. There were two reasons for this painful gap in the long range of subjects dealt with by Art. For one thing it was not allowed. British decorum regarded any publicity of an embrace as indecent. Another reason afforded me by two or three distinguished artists was the difficulty of making a good composition of a fervent embrace. Shortly after, a French artist came out "very strong" with "Vertige." Not only was it replete with rosy rapture, but it was technically good. The balance of the whole picture was excellent. Then, much more recently, there came a painting, adopted by a whiskey firm, comprising two figures, which I presume to be young Americans, whose determined osculation makes the boat, in which they are seated, look rather precarious. This possibility of the presumed unsuitability of a subject may be the reason that the painter has exercised his art so little in connection with aircraft. At any rate, I doubt if there are any unnatural and unhealthy folk who will put it forward that an aeroplane is indecent.—A. L. in London *Aeronautics*.

#### Aerial Possibilities

Lawmakers of international reputation have been giving serious consideration to fixing the legality of births, marriages, death and other incidents that may occur on an aircraft during an aerial journey. The *Revue Juridique de Locomotion Internationale* in a report of the meeting of the committee on aviation shows that the foreseeing committee at one of its meetings decided that in case of an infant being abandoned on board of an aircraft and its parents are not known, the infant will follow the nationality of the aircraft.

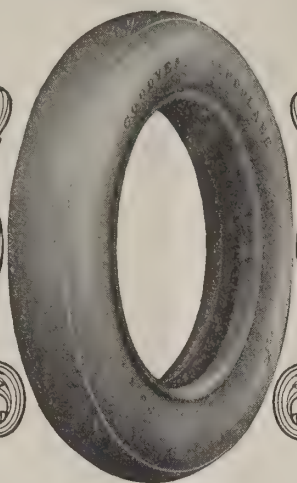
This foresight is impressive, and we cannot afford to laugh. Supposing that someone should operate in this country a dirigible of the kind that can carry forty-five people for forty hours and travel at a speed of forty-five miles an hour; and supposing that while on a trip from New York to Montreal, over Canadian soil, a child should be born of American father and Italian mother. Would we not be glad to have a code to decide just which is which and what is what?

Another reason why we may not laugh is that we may see the code in use before very long. There are on record half dozen aerial elopements and half dozen aviators and their brides have had an aerial honeymoon, while scores of newly married couples have taken honeymoon trips in Zeppelin dirigibles.

#### Heard in Dolan's

"What's become of Fanning?"  
"He went West and started a paper."  
"What did he call it?"  
"The Aeroplane."  
"How did it go?"  
"It went up."





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Goodyear Cord Aeroplane Tires are double-tube clinchers. They come in various sizes, up to 26 x 5 inches.

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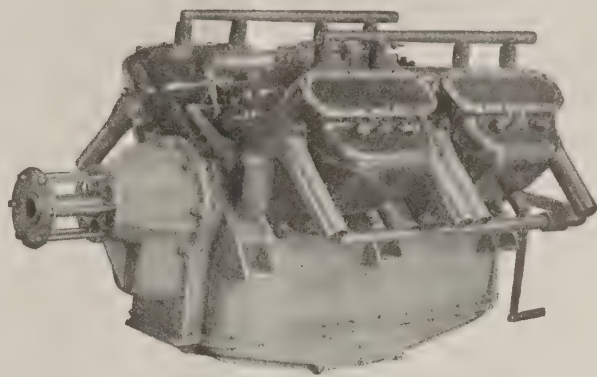
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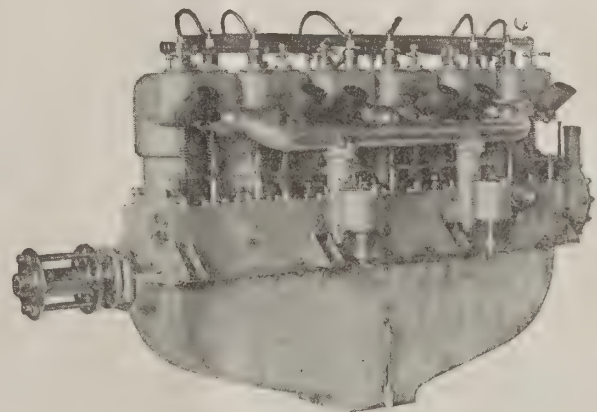
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**BOSTON, MASS.**



Six Cylinder 80 Horse Power



**Makes Newspaper Delivery by Aeroplane**

The Chicago *American* recently delivered its papers via the air route. Fred Hoover was the aviator who made the delivery, carrying a special extra of the *American* from Chicago to Elgin in twenty-eight minutes, while the fastest train takes an hour to make the same trip.

This is a saving of thirty-two minutes over the train service, and shows one of the main possibilities of the aeroplane for light, fast commercial delivery.

**Miss Stinson Loops at Caro**

Miss Katherine Stinson, using her new tractor biplane, recently flew at the Caro, Mich., fair. She used the 80 Gnome motor used by the late Lincoln Beachy, and executed a number of loops and upside down flights.

**Aviation at Sheepshead**

Sheepshead Bay is soon to become an aviation centre, according to an announcement made by the Aero Club of America, which is now completing arrangements with the officials of the Sheepshead Bay Speedway. This will provide weekly flying meets and facilities for school work.

Plans have been drawn for a row of concrete hangars, sixty feet square, provided with electric light, steam heat, and all the conveniences necessary to enable aviators to stay with their aeroplanes in winter as well as summer. Beginning next spring, meets will be held every Saturday, and aviation schools and passenger-carrying tests will be conducted every day in the week.

In discussing the project Mr. Henry Woodhouse, Governor of the Aero Club, said:

"Had there been aviation schools and weekly flying at Sheepshead Bay this summer we would have at least a score more aviators for national defense than we now have."

**Luckey Flies Over Covington**

H. S. Luckey, in his Curtiss biplane, recently flew over Covington. The start was made from the Erlanger fair outside the city, and Luckey flew directly over the business section of Covington, dropping a great number of posters advertising the fair.

**Thompson to Loop the Loop Over Columbus State House**

Arrangements have just been made for De Lloyd Thompson to fly at Columbus, Ohio. He will fly there September 15th, 16th, 17th and 18th, using his 90 h.p. Gyro motored "Looper," with which he intends to loop the loop over the State House.

**Patterson Aviators to Fly at Detroit**

The Patterson aviators are booked to fly at the Michigan State Fair, Detroit, Sept. 6th to 15th. They will give their regular program of exhibition flights in addition to staging a demonstration of the use of aeroplanes in warfare.

A feature will be the races between the aviators and such well-known automobiles racers as Louis Disbrow and Bill Endicott.

**Night Flying Becoming Popular at Atlantic City**

Visitors in search of thrills have adopted moonlight flying as their latest fad, and aviator Jaquith is doing a rushing business with his Curtiss flying boat as a consequence. The first flight by moonlight was made recently under the most ideal conditions. Blazing with electric lights, the 'plane, flying at an altitude of 500 feet, whirled down the beach at high speed, bringing mighty cheers from the throngs gathered beneath. It could be plainly discerned at a distance of two miles, and it is estimated that an audience numbering more than 100,000 watched the unique flight.

A few minutes after the first 'plane made its appearance a second appeared, and for more than an hour the first moonlight aerial flights in the history of the resort continued. At times the airboats would fly directly in the face of the moon, and the spectacle then presented to the great multitudes was weird in the extreme. Passengers were carried on each flight, and the demand for seats since at all times has been in excess of the capacity of the two flyers.

**Ruth Law to Fly at Kentucky State Fair**

The principal feature to be offered at the Kentucky State Fair during the week of September 13th will be the flying of Ruth Law in her Wright biplane. In addition to her exhibition flights Miss Law will take up George Mayland, a parachute jumper, who will jump from the machine at a height of 3,000 feet.

**Memorial to Calbraith Perry Rodgers**

The artist-architect, Charles R. Lamb, has been entrusted with designing a memorial to the late Calbraith Perry Rodgers, the aviator, who made the unique flight across the United States in 1911, starting from Sheepshead Bay, and arriving at Pasadena, Calif.

The monument, which is to be erected in Allegheny Cemetery, Pittsburgh, is classic in design, elaborately carved in stone, with two large pillars, cap and base, with large inscription panel bearing, besides the personal name and dates of birth and death, and his record as an aviator, which includes the fact that he won the endurance prize in August, 1911, at the Chicago tournament, before making his trip across the continent.

The main enrichment of the monument is an alto-relief in bronze, showing Mr. Rodgers in flight across the continent in his aeroplane.

It will be remembered that Mr. Rodgers was killed in a fall from his machine at Pasadena, in April, 1912.

**Chicago Model Flyers Make Great Showing in Contest**

(Continued from page 619.)

of taking official flights until absolute control was obtained. The two great flights of the day came late in the afternoon. Mr. Nealy's flight of 2,875 feet was made about 4 o'clock, and the measuring of this required approximately 65 minutes. Mr. Cook's flight of 2,410 feet came even later in the afternoon and was not measured until 6 o'clock. Mr. T. Hall, of whom much had been expected earlier in the day, experienced trouble in directional control, but succeeded nevertheless in making an excellent three flight average. Mr. Ward Pease' model, meant for the calmest of calm days, was over-surfaced and could not remain up long in the great wind.

Notwithstanding this the club built up a fair average of over 1,100 feet. The flights of the four members of the team were:

	1st	2nd	3rd
Nealy-Hitt model.....	1,226	1,750	2,875
Thomas Hall model.....	1,359	1,240	1,163
Ellis Cook model .....	2,410	0	0
Ward Pease model .....	150	200	78

The big lesson learned from this meet, was that although the I. M. A. C. has individual experts, it has not practised enough team work—and that *adjustment counts*.

Hydros next! 90 seconds is the goal!

**Long Island Model Aero Club Team Competes in Rain**

Flying in a dead calm with occasional showers the Long Island Model Aero Club flyers competed under difficulties in their trials for the distance event of the National Model Contest. The contest was held at Rosedale, L. I. Henry Criscuoli created unusual interest by flying a new model, which measured 6 feet long and weighed nearly two pounds—in spite of its great size and weight, which handicapped it in a calm, it flew remarkably well, every flight measuring well over 1,000 feet.

Those who made up the L. I. M. C. team were: Lester Ness, G. H. Criscuoli, Henry Criscuoli, and Charles Obst.

The results of the trials were as follows:

	1st	2nd	3rd
Lester Ness .....	125	300	352
G. H. Criscuoli .....	151	284	360
Henry Criscuoli .....	1,502	1,266	1,478
Charles Obst .....	214	1,070	418

**Buffalo Model Aero Club**

J. W. SCHREIER.

A regular meeting of the Buffalo Model Aero Club was held in its old club rooms August 25th. More spacious quarters have been obtained, and hereafter all meetings will be held at 48 Dodge street, on Tuesdays instead of Wednesdays, as formerly.

The members were informed of the Aero Science Club's action in connection with its application for membership, which was duly honored, thereby making this club a branch of that organization.

A large number of visitors were present, and Mr. Weyand gave an interesting talk on the advantages of co-operating with the A. S. C. Several new members were admitted, including Mr. W. H. Davis, a well-known English model flyer.

Owing to the resignation of Mr. W. J. Webster, former secretary-treasurer, another member, Mr. J. W. Schreier was elected to fill the vacancy.

Inclement weather has prevented the club's field meets for the past three weeks. At the next meet, if favorable weather conditions prevail, it is expected to break former club records, as a number of new models are in readiness.

For further particulars address J. W. Schreier, Secretary, 48 Dodge street, Buffalo, N. Y.

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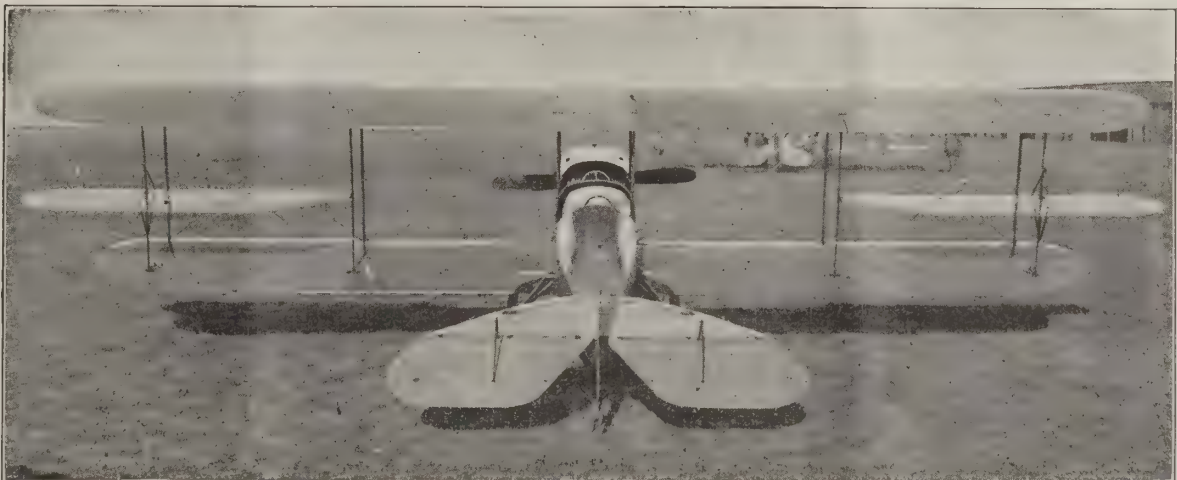
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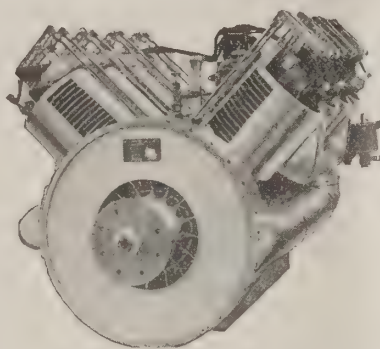
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Fills the cloth thoroughly and shrinks it moderately. It is gasoline, oil and water-proof. Can be worked smooth with sandpaper, and brought to a high gloss after three or four coats, or can be finished with any good spar varnish.

Use at least three coats, applied quickly, with a brush about two inches wide, and allow one hour for drying each coat. Price, \$3.85 per gallon, plus cost of cans or barrels.

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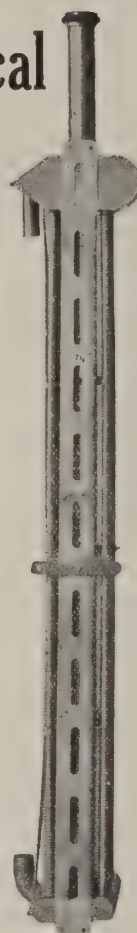
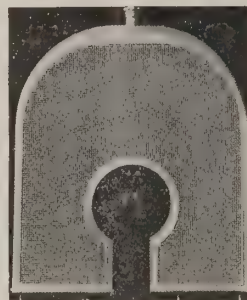
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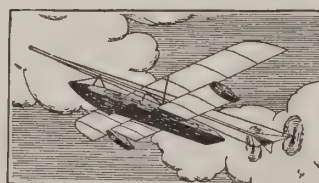
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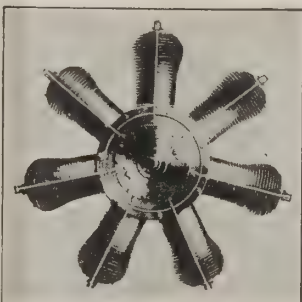
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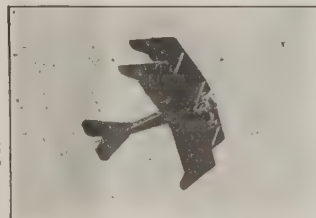
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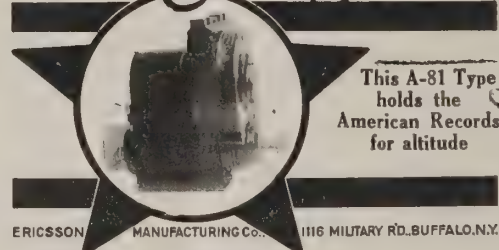
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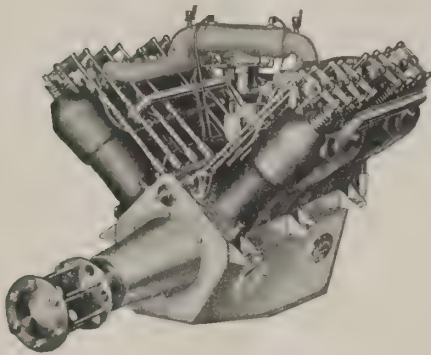
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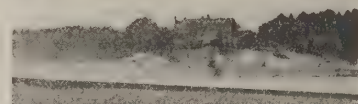
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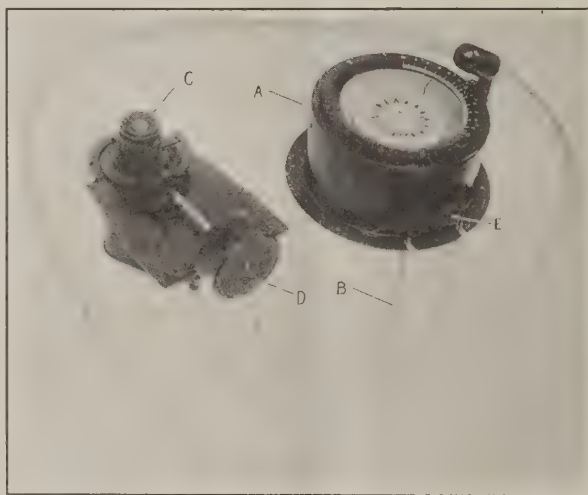
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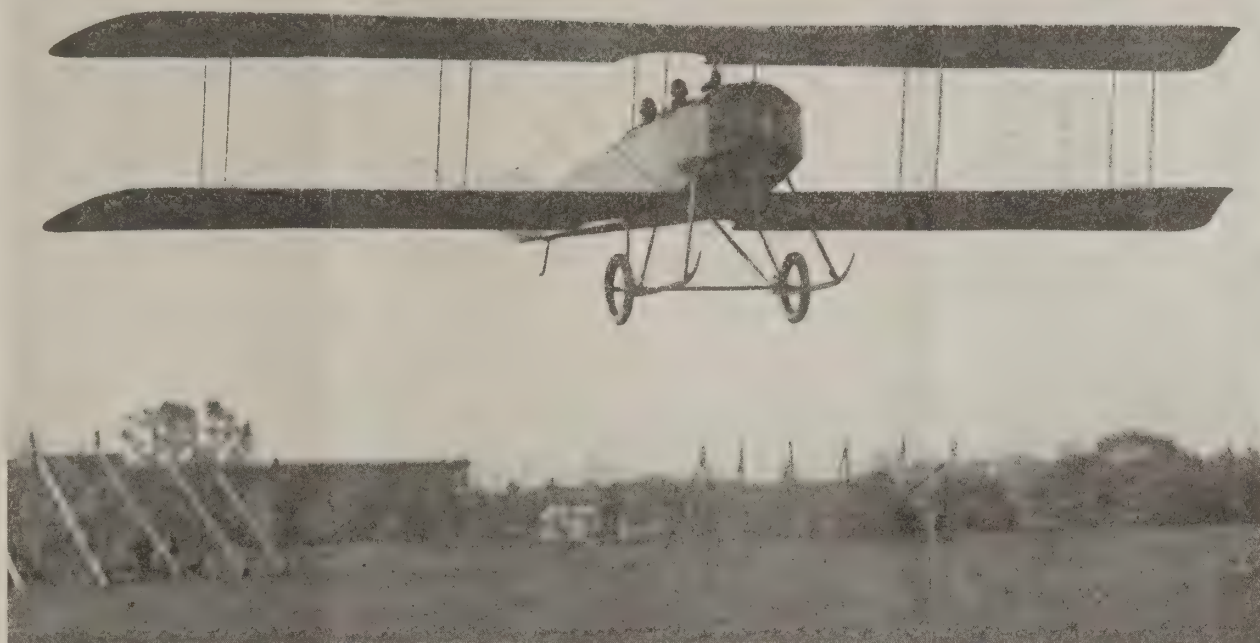
THE device has for its object the steering of aeroplanes and the compensating of drift due to side winds. On the cut shown herewith A is a regular aeroplane compass of proven value. The lubber line, the line to which the pilot holds his compass card, is shifted or moved in its relation to the aeroplane through the mechanical connection marked B by the small monocular telescope marked C. Since the telescope is set in a frame mounted on the aeroplane in such a manner that a clear vision of the ground is obtained, the observer merely keeps the wires in the telescope parallel to the line of motion of the aeroplane. By so doing he is really turning the aeroplane since the pilot is holding his course to the lubber line, which has been shifted. D is the fibre handle, which the observer takes hold of, and E is the shaft which goes through the compass bowl, turning the lubber line.



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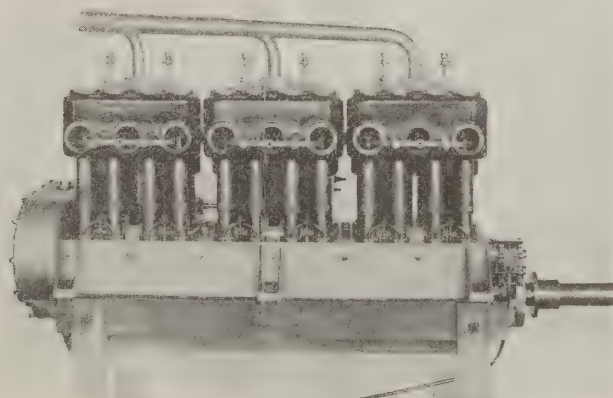
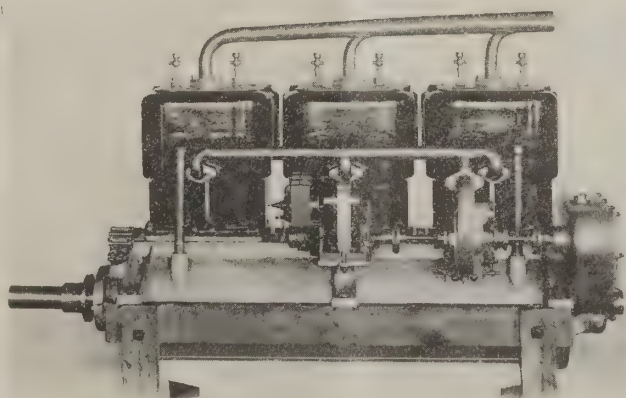
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